The Manufacturing and Construction Journal of the Textile Industry

COTTON

Entered as second-class matter at the postoffice, Dalton, Ga., under Act of March 3, 1879.

Volume 92.
Number 4.
$1.00 a Year.

FEBRUARY, 1928

Published monthly by
W. R. C. Smith Publishing Co.
Dalton and Atlanta, Ga.

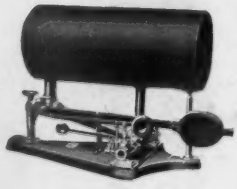
Eliminate the Bottle Necks in your Steam Heated Equipment

Wide-open passages for steam circulation. Congested orifices and drip-line obstructions reduced to a bare minimum. Condensation drained immediately as it forms and returned to the boiler *hot.*

These are a few of the outstanding advantages brought about by the Morehead Back-to-Boiler System . . . advantages that mean increased efficiency, hotter and drier steam, and *very considerable fuel savings.*

During 35 years of successful steam drainage experience, we have helped solve hundreds of steam problems for manufacturers in every steam-using industry . . . and actually pointed the way toward big returns on a small investment.

What we have done for others, we can do for you. *May we send you complete details and proof?*



Morehead Manufacturing Co.
Department "C" Detroit, Michigan

Morehead

Back to Boiler

SYSTEM

Address the Kaumagraph Company, 350 West 31st St., New York (or one of its branches at Boston . . Chicago . . Philadelphia . . Charlotte, N. C., or Paris, Ont. . . or Paris, France) if you would care to discuss the possibilities of having your package lithographed by Kaumagraph.

. . . before she *feels* your hosiery she *sees your package*

Even before the saleslady opens the box and the customer feels the hose . . . the customer has a definite impression of that hose. Your package has given it to her. To make certain the impression is a good one, many of the best known hosiery manufacnow have their packages "lithographed by Kaumagraph." For Kaumagraph's Lithographic Department has established new standards of hosiery packing design and lithography, new standards based on an intelligent appreciation of the selling value of a worthy package.

'Lithographed by Kaumagraph"

COTTON

Published Monthy by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor. **R. W. PHILIP, Associate Editor.**

Editorial and Advertising Department, Grant Bldg., Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address notify us, not the postmaster. Always give the old address as well as the new one.

Volume 92 **Member Associated Business Papers, Inc.** **Member Audit Bureau of Circulation.** **No. 4**

CONTENTS

Among COTTON'S Readers 49

With the Publishers— 53

GENERAL AND TECHNICAL—

Preparation of Rayon for Weaving 335

Parallel Tubes and Cones 339

Cotton Spinning in China 341

How Much Profit? 346

Mercerizing Cotton 348

The Safety Organization 351

CURRENT TOPICS—

Politics and Farm Relief 352

Foreign Trade Values 353

Government Can't Be Something Else 353

Pegging the Dollar 354

No Politics the Best Politics 354

Texas Bids for Eastern Mills 356

What the Southern Mills are Doing 356

New England Mill Situation 358

Cotton Comment 362

Notes About Men You Know or Know About..... 364

An Old-Timer Says— 367

HOW OTHER MEN MANAGE—

Wants Glue for Card Scavenger Roll 371

Why the Shuttles Break 371

Overcoming Static on Dyed Cotton 375

Waste at the Drawing Frame 376

Cockled Yarn 377

Cleaning Cotton 379

Winding on Roving Frames 381

The Use of Variable Speed in Spinning 385

Double and Single Roving in Drafting 387

Preventing Plucking on Stiff Finish Goods 391

Cracked Selvages 392

Roll Settings for 20s Warp Yarn 392

KNITTING SECTION—

Construction of Full-Fashioned Hosiery 395

Calculating Production in the Knitting Mill 401

The A B C of Dyeing 407

Among the Knitting Mills 410

Irregular Stitches and "Crepe" in Silk Hose..... 413

Laying Out a Fine Gauge Seamless Hosiery Mill, Also Some Points on Avoiding Seconds 413

Speeds, Tensions, Wool Yarn and Overhauling... 415

A Convenient Table for Knitters 416

An Interesting System of Inspection 416

Causes for Crepe Appearance on Silk Hose..... 417

The Yarn Market 420

The Knit Goods Market 423

New Knitted Features 434

W. H. WILLEY, *Chairman of the Board*
D. W. BROOKS, *President*
NORMAN MONAGHAN, *V-Pres. & Treas.*
W. H. FRAZER, *Vice-President*
G. H. KEMKER, *Secretary*

Meeting Individual Demands

Regardless of the amount, grade or type of cotton you may need, we, with our scores of buyers sprinkled over the entire South, can efficiently pick out your individual requirements and ship them promptly. May we prove our ability to benefit your interests?

Capital $1,000,000.00

NEWBURGER
COTTON COMPANY
Incorporated
MEMPHIS

PREPARATION of RAYON FOR WEAVING

Conditioning Types of Swifts. The Rayon Bobbin.

By L. A. Palina

The preparation of rayon for weaving naturally falls under two classes; namely, the preparation of filling yarns and the preparation of warp yarns. Since there are so many points to be covered in connection with each of these divisions, we shall separate this discussion into the two subjects of filling preparation and warp preparation. It should also be borne in mind that this series of articles is intended more for the cotton mill man who uses rayon for decorative designs in cotton weaving than for weaving in regular silk mills.

Filling Preparation.

Conditioning.

Where the rayon is to be prepared in a weaving mill for consumption in the looms it is nearly always bought in the form of skeins. The rayon is generally received in cases of 220 pounds each and each case contains 22 books or packages of 10 pounds each. Inside each package the skeins are twisted together in groups of about 5 skeins each and enough of these bundles are tied together in the package to form 10 pounds.

Up to the last year or two it was almost a necessity to treat the rayon with some kind of oil or emulsion before using it for filling. However, the rayon manufacturers have made improvements in their product within the last few years, and very good results in weaving can now be obtained by winding the rayon for filling without any preparatory process. Some users of rayon in filling, however, still prefer to treat this product with an oil before winding. In our mill the process of oiling was to prepare enough rayon every evening for the following day's consumption. We were equipped with box trucks, each of which would hold one full case of rayon, and these trucks were made of wood and lined with cloth in order to prevent the rayon filaments from snarling on splinters. Our process of oiling was as follows: A case of rayon would be opened and one package of 10 pounds removed. This package would be opened and the bundles of skeins would be untwisted sufficiently to loosen them up but not enough to separate each skein from the other. These bundles were then laid side by side in the bottom of the oiling truck until a full layer was formed on the bottom of the box. The oil was then sprinkled on this layer of rayon by dipping an ordinary whisk broom in the oil and sprinkling from one end of the box to the other. Another layer of bundles would then be placed in the box and the sprinkling of oil would then be repeated. This procedure would continue until the full 220 pounds of rayon had been opened and oiled.

At first thought it would seem that this would be a rather haphazard method of oiling and that the percentage of oil applied could not be regulated. This was not found to be the case in actual practice, because the correct amount of oil would be weighed out in a pan for each case of rayon, and it takes an ordinary operative only a very short time to learn to distribute this amount of oil throughout the entire case. For instance, suppose that 2 per cent of oil is desired to be applied to the rayon. Two per cent of 220 pounds would be 4.4 pounds of oil. It is a simple matter to weigh 4.4 pounds of oil in a shallow pan, but the regular procedure is to weigh this amount of oil and see how much it measures in an ordinary measuring cup. After the first weighing and measuring it is then only necessary for the operative to measure the same amount for each case he prepares.

For obvious reasons, it would not be good policy to mention any brand of oil to be used in preparing rayon for filling. There are a number of good rayon oils on the market, and a type of oil which will penetrate readily should be used. By leaving the rayon to absorb the oil over night there should be no trouble from streakiness of oil, because if the oil has any penetrating powers at all it will be spread throughout the entire case of rayon by the next morning.

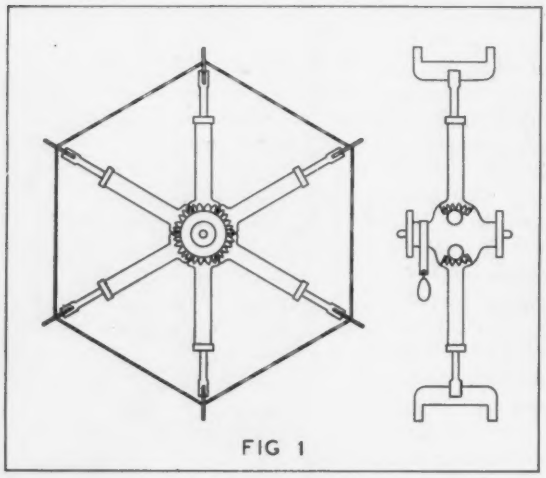
We have seen a great number of rather elaborate systems of oiling rayon, some of which call for spray guns using compressed air or a hand air pump. Others consisted of conditioning chambers with racks for holding the skeins and oil sprays in the chambers. We have found by experience, however, that the method just described delivers rayon to the winding operation in excellent condition as far as the oiling goes, provided a penetrating oil is used. Furthermore, by untwisting the bundles or skeins only enough to loosen them up, there is no danger of the skeins becoming tangled such as is the case when the rayon is fully opened up and oiled by a spray gun. It is our opinion that the less handling to a skein of rayon the better it will wind in the subsequent operations.

We come now to consider the actual preparing of the rayon for use in shuttles. There are two methods of transferring rayon from skeins to filling bobbins: The two process method, whereby the rayon is first wound from skeins to spools and then wound from the spools to filling bobbins; and the other method whereby the rayon is wound directly from skeins to filling bobbins without the intermediate process of spooling. Either method calls for the use of a skeleton frame or "swift," upon which the skein is placed for either spooling or winding. Since this swift takes a rather prominent place under either method of filling preparation, we think it would be well to discuss the different types of swifts in use before going into any of

the details of either method.

Types of Swifts.

There are three general types of swifts in use today. In Fig. 1 is shown what is known as a geared swift. With this swift each spoke consists of two members, one of which is threaded on the outside and the other on the inside. By revolving the outside shell 'round the spoke itself the spoke is run out or in as desired. There are six of these spokes to the swift, and the outside shells of the spokes are all geared together at the hub of the swift as shown in the sketch. By thus turning any one of the spokes the swift

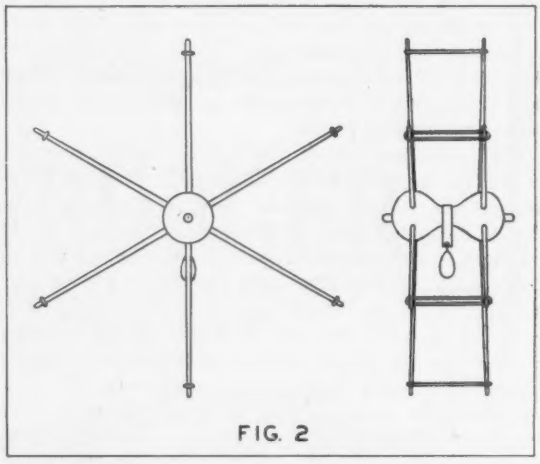


The geared swift, a side and end view.

can be increased or decreased in size as desired. The principal feature of this type of swift is that the hub of the swift is always exactly in the center of the skein. Therefore as the swift revolves the skein is always concentric with the hub so that there are no high and low spots to cause unevenness in the tension as the swift revolves. In using this type of swift the spokes are run inward to apply the skein and then run outward again to tighten the skein into position. This type is a little heavier than the other types and the tension on the yarn is controlled by a weight hanging from a leather strap around one side of the hub as shown in the sketch.

Another type of swift in use is shown in Fig. 2. This swift is simply a wooden hub with steel bearing pins in each end and wooden pins driven into holes in the periphery of each end of the hub. The pins, of course, are in pairs and each pair is connected at the top by a cord loop as shown in the sketch. In applying a skein to this type of swift the operative generally slips about two cords down toward the center of the swift, which decreases the circumference of the swift. The skein is then applied and the cords pulled back into position for tightening the skein. The use of this type of swift calls for some little skill on the part of the operative in being sure that the cords are all pulled out to the same distance from the center so that the skein will revolve concentrically with the hub. This type of swift is very light, however, and is very popular with a great many mills. The tension is regulated with a weight hanging by a strap in the center of the hub. The cord loops as used are specially made of braided cord and the ends of the loop are spliced together in a special manner so as to prevent a knot. The principal disadvantage of this type of swift is in the skein not running concentrically with the hub when the loops are not all placed the same distance from the hub. This can, in a way, be prevented by cutting small notches in the outside of each pin exactly the same distance from the center of the hub and at a sufficient distance to where the skein will be held firmly in position. By notching the pins as described, the spooler girls find it easier to keep their skeins concentric. Also, by having the weight in the center of the hub it is out of the way and causes no trouble from swinging against the spokes. With the geared type as described first there is sometimes trouble from the weight swinging against the spokes of the swift.

The third type of swift, which has come into use within recent times, is what is known as the collapsible swift. Figure 3 illustrates the principle of this swift. There are several different applications of this principle but the principles of all are the same in that the swift is composed of two sets of spokes. In one set there are three pairs of spokes all joined together and at 120 degrees angle from each other. The other set of spokes is also composed of three pairs at the same angle and also are fastened solidly together. The swift is built so that in running position the spokes of one set bisect the angles of the spokes of the other set, so that the regular shape of swift with six pairs of spokes is the result. The feature of this swift is that it is much easier to apply a skein to this type than to any other. The spooler girl in applying a swift simply grasps any two spokes on one side of the swift and presses



Side and End View of the Ordinary Pin Swift.

them toward each other. Due to the construction of the swift as described, this pressing of the two spokes together causes the entire swift to form a three spoked swift instead of six as before. This naturally gives the same effect as shortening the radius of the swift and the skein can then be applied without shortening any of the spokes. After the skein is applied the spokes of the swift are released, and due to a spring action the spokes swing back into their regular position. Fig. 3 also shows the swift as it is collapsed by the operative in order to apply a skein. This type of swift is finding popular use since its introduction, because it has most of the advantages of any of the other types and practically none of the disadvantages. It has a weight hanging from the center of the hub where it is out of the way, and due to the collapsible feature the skeins can be applied without disturbing the length of

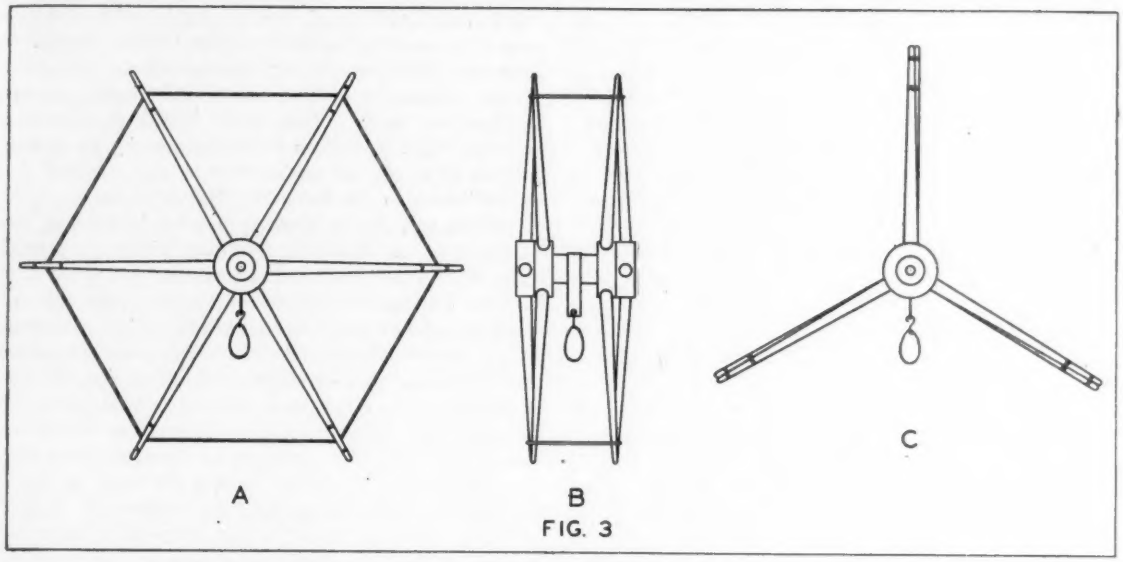


FIG. 3

The Collapsible Swift. "A" shows side view opened; "B" end view opened; "C" side view collapsed.

the spoke. This assures the skeins always revolving concentrically with the center of the swift, and there is, of course, a saving of time in applying the swifts because of the collapsible feature.

There is one point in connection with applying the skein to any swift which should be stressed as regards to either spooling or winding from skeins. In the rayon manufacturing plants the skeins are formed on a machine known as a reel, which is practically the same type of reel as is used by yarn mills in putting up cotton yarns in skeins for the market. In rayon, however, there is a great deal of care taken in forming the skeins and there are more crossings or diamonds in the winding of the skein than in the reeling of cotton. After the rayon skein is completed, the reeler girls put in what are known as "tie-threads." There are generally four of these tie-threads to each skein and they are placed at equal distances around the periphery of the skein. These tie-threads are put in before the skein is removed from the reel, and their function is to enable the winder girl or spooler girl to straighten out the skein on the swift to exactly the same position it was in when it was on the reel. Care should therefore be taken in applying the skein to a swift that the skein is laid on the cross braces of the swift perfectly flat and with the tie- threads straightened out exactly as they were when they were put in. The winder girls also should be very careful to determine which is the inside and the outside of the skein before applying it to the swift. When the skein is formed on a reel it is naturally a little smaller on the inside of the skein than on the outside. At first thought this difference in diameter would seem to be so small as to be negligible in winding from a skein, but the difference is sufficient to cause trouble if the skein is not applied to the swift right side out just as it was on the reel. If it is turned wrong side out the inner part of the skein will be loose and fluffy, while the outside will be drawn taut. Winder girls very quickly learn to determine which is the outside of the skein and since the skein runs off much better when it is right side out there is no trouble in getting them to apply the skeins in the proper manner.

The Rayon Bobbin.

When rayon was first introduced into the textile field in weaving, it was nearly always wound upon paper cops by the manufacturer or a commission winding plant and sent to the weaver on these paper cops. The reason for the paper cop is obvious. In the first place, the rayon used was called artificial silk and was used in that capacity. It was generally woven in silk looms and therefore the size of the cop was very small. Also there was the matter of transportation charges in shipping this wound rayon from winding plant to weaving plant, which naturally called for a light container for the rayon and one which, being inexpensive, would not have to be returned to the winding mill.

When the field of rayon extended to the cotton weaving mills, however, it came in under a different situation. Whereas in the pure silk field it was used in the place of pure silk, its field in cotton weaving was more for decoration and therefore somewhat outside of the field of pure silk. Cotton weaving mills first started using rayon in the form of filling and it was generally used in box looms for decorative designs. The first mills to use rayon bought it already wound on paper cops as described above, but it was not very long before these cotton mills began to realize that their looms did not have the same limitations as the pure silk loom, which called for a small bobbin to fit the small silk shuttle. The cotton weavers naturally wanted to get as many yards of rayon on a bobbin as possible, and mainly for that reason they began to look around for some other type of bobbin to use with rayon in their looms. They also felt that they were paying a rather high price for having this winding done in a distant plant, and even though they bought the rayon already wound on paper cops from the manufacturer they felt that the difference in price between the cop rayon and skein was considerably more than it would cost them to wind their requirements in their own mills. Experiments were therefore made, not only with a different type of bobbin for the rayon but toward winding the rayon in their own mills for their own consumption.

Naturally the first type of bobbin to be tried out was the regular cotton filling bobbin, and even today some mills are still using the same bobbin as is used for their cotton filling. Some mills, however, particularly those who use a great deal of rayon for filling, experimented further, with the idea of getting a bobbin which would give better satisfaction with rayon. It should be first understood that the rayon itself is an entirely different product from cotton and the qualifications of a cotton bobbin would therefore not be the same qualifications as for a rayon bobbin. It is desirable for a cotton bobbin to have as large capacity as possible for a given size shuttle. A large capacity is also desirable for rayon but the capacity should not be so large as to endanger the running quality of this type of filling, since quality is always of prime consideration.

Several mills have adopted a type of rayon bobbin as shown in Fig. 4. Some of the principal features of this bobbin are as follows: It is at first noticeable that the bobbin is considerably shorter than the average cotton bobbin. Even though this decreased the capacity of the bobbin, it was found desirable to use a shorter length in order to insure a smooth delivery of the rayon from the bobbin in the shuttle. With a longer bobbin, when it was almost empty of rayon in the shuttle, the yarn would have to take several wraps around the barrel of the bobbin between the base and the tip, and it was believed that this was the cause for some of the "shiners" found in the finished cloth. It is generally recognized that "shiners" are the biggest trouble which a rayon weaver will run into. Also the shorter length of bobbin gives more room in the throat of the shuttle for packing or tension devices, which are very important. It will be observed that the outside diameter of the wound bobbin is probably not so large as is generally used for cotton, even though the rayon bobbin is to be used in a regular cotton shuttle. The principal reason for this is to allow plenty of space for fur or some other packing to be used on the inside of the shuttle.

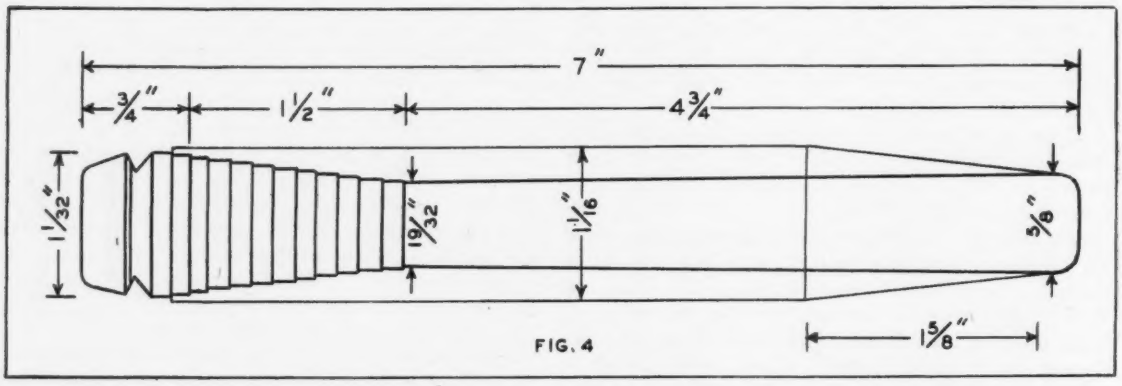


FIG. 4

The barrel of this rayon bobbin is larger than would seem necessary for so small an outside diameter. There are two or three fundamental reasons for having this large barrel. In the first place most mills wind their rayon from an unrolling package which is either a spool or a skein. The winder spindle which holds this bobbin or quill is driven at a constant speed, so that the yarn speed of the rayon varies between the limits fixed by the diameter of the bobbin barrel and the outside diameter of the wound bobbin as the thread guide traverses back and forth. The winding principle to take care of this variation in yarn speed will be described later. It can be seen, however, that there must be an intermediate member on the winder between the revolving spool and the revolving spindle to compensate for the variation in the yarn speed on the bobbin, because the spool or skein will naturally revolve at a uniform speed of rotation, which will be governed by the average yarn speed of the end as it traverses from the high part of the bobbin to the low part. The difference in speeds is compensated for by a spring member between the two packages. If the barrel of the filling bobbin is too small, there will be too great a difference in yarn speed from the low diameter to the outside diameter, and this will throw too great a difference in speed for the compensator to take care of. Therefore, if the bobbin is made too small for the outside diameter, a great deal of tension will have to be used on the compensator and a very hard bobbin will be wound. Furthermore, with such a great amount of tension on the yarn there is danger of the compression from the outer part of the bobbin causing the rayon to slip on the barrel of the bobbin and form a "soft nose." Another reason for a large diameter is that it affords a larger surface for holding the rayon on the bobbin. The rayon filaments are very smooth and slip on a polished surface very easily, therefore the larger the bobbin the less tension will have to be used in winding to keep the yarn from slipping on the barrel of the bobbin as the shuttle is thrown from one side of the loom to the other.

It will be seen from Fig. 4 that the diameter of the bobbin barrel at the tip is slightly larger than at the apex of the cone and that the surface between the two points mentioned is perfectly smooth. A great many experiments have been made with different types of bobbin barrels, some of which were with ridges on the barrels, some with grooves, and numerous other types. The smooth barrel, larger at the tip, is being used by several well known mills and is found to be perfectly satisfactory. The reason for having the bobbin larger at the tip is to prevent the yarn from slipping on the barrel as the shuttle passes from one side of the loom to the other.

In using this bobbin on a winder, care should be taken to adjust the traverse or stroke of the winder so that the traverse, in commencing to wind a bobbin, coincides exactly with the length of the conical base of the bobbin. If the traverse does not come to the apex of the cone a soft nose will result, and if the traverse extends beyond the apex of the cone and along the barrel of the bobbin a hump will form at this point, and this will cause trouble in weaving. The length of this cone base as given in the sketch has been

found to be satisfactory in several mills and by adjusting the winding stroke to conform to this length a satisfactory bobbin will be produced.

It will be observed that the diameter of the bobbin at the base of the cone is slightly smaller than the outside diameter of the wound package. The reason for this is that the winding machine uses what is known as a builder wheel to run the traverse motion out toward the tip of the bobbin as the bobbin fills up. This builder wheel is mounted on a round, threaded rod, so that on each traverse of the thread guide this builder wheel touches very lightly the outside of the wound bobbin and is rotated slightly by coming in contact with the revolving bobbin. The direction of the threads on the traverse rod is such that the slight rotation of the builder wheel keeps running the traverse motion out as the bobbin fills up. The cone base on the bobbin is made smaller than the outside diameter of the wound package to prevent this builder wheel from touching the wood when a bobbin is started. If the builder wheel were allowed to strike the wood base the rayon would be cut by being struck between the two hard surfaces, and the builder wheel would also be damaged.

The metal cap as shown on the base of the bobbin is merely for the protection of the bobbin as it is held by suitable grips or holders in the shuttle, and the dimensions of this cap and the circular groove between the metal cap and the cone base should be worked out to correspond to the fittings in the shuttle for holding the bobbin in place.

[This is the first of a series of articles on rayon preparation. The second article will appear in an early issue. —Editor.]

Parallel Tubes and Cones

Size as an Important Economic Factor. Proper Tension a Feature to be Studied. Suitable Permanent Records an Advantage

BY R. A. SONIAMAN.

PART ONE.

Parallel tubes and cones are perhaps the most widely known and common yarn packages in the textile trade. Indeed, there is hardly an establishment that does not wind or use the one package or the other. While the remarks that follow deal mostly with the parallel tube, they apply in most cases directly to the cone also.

In a study of the parallel tube package with a view toward ascertaining the most efficient method of making it up, together with standardizing the best practical and economical size, it is necessary, of course, to know whether the package is to be wound for the trade, or whether it is to be used in the home plant; because conditions that may pass in the local firm may not work successfully with the customer.

Obviously, to get the best results, the size of the cheese or parallel package must be settled upon; then, once the most practical diameter has been determined, after adequate testing out, naturally, a measure or gage should be furnished each winder operative. The latter are then held responsible for making the cheese or tubes to measure.

Generally, the packages are six inches in length, with a diameter to suit the needs of the subsequent operation; or, as sometimes is the case, the diameter is limited by the strength of the yarn. This latter remark is especially true for fine yarns either ply or single, which are put in creels on twisters, the packages turning as the yarn is drawn from them. Fine yarns can pull only a limited weight and if this weight is exceeded, the breakage of ends at the tubes is excessive, with a consequent deterioration of the product because of the increased number of knots ensuing.

Furthermore, the abnormal creel breakage causes a loss in production and thus adds to the cost per pound; moreover, the workers are often discouraged and will leave the employ of the firm unless the bad condition is remedied, or they are given less ends to run. Which latter expedient in turn means a rising labor cost.

The diameter, on the other hand, may be limited by the spacing of the pins or skewers in the creels of the twisting or other machines. In the former especially this condition is met with in the older makes whose creels are of the two story porcupine type built to accommodate the smaller headed spools so common some years ago.

Where this condition exists, it would be well to look into the matter of changing the type or spacing of the creel to enable the use of the larger, more economical package. These remarks apply to both the winding firm which has twisters of the type mentioned or a customer who simply twists the yarns he buys. The resultant saving in labor cost, and the improvement in quality of the longer running cheese become obvious the moment one looks into the matter.

To make a smaller package than can be used means that extra knots will be put into the product; and when competition is keen, and business in general somewhat dull, quality is a decisive factor, other things being equal.

Moreover, there will be more work in the following process because the smaller cheese will need replenishing more frequently than larger ones; and even if the use of larger cheeses does not directly result in lower labor costs, it surely will bring about an improved quality, because the workers will have more time to look about and check any bad work that might otherwise slip by. There is also a reduction in waste for the same reason.

Sometimes, however, the adoption of a size of cheese that can be practically handled both at the winding and, say, at the twisting process, will bring about a direct saving of labor cost in the latter operation because of the reduction in the amount of the work of creeling which the introduction of the larger package brings about. For example, a 1000 spindle worker might, perhaps, be able to tend 1200 spindles with no more—if as much—work as she had with the former number of spindles when using the smaller, old style, spools.

It is advantageous for the overseer of the winding to keep on hand a list of the weight and approximate yard-

DETAILS OF WINDING

CUSTOMER	COUNTS	PLY	DIA. OF TUBES	WEIGHT PER TUBE		TENSION WEIGHT IN GRAINS	
				LBS.	OZS.		
BLACK + SON ✓	29	1	5	2	–	160	

FIG. 1.

ages of the cheeses he winds, so that should something develop in connection with the matter of yardage wherein the latter might become the subject of controversy, he can check up to ascertain the trouble. In connection with the record of weight and yardage per package, a record should also be kept of the weight or pressure of the tension used; for the reason that the weight influences the density of the package. See Fig. 1.

The matter of tensions should be given careful thought and investigation as it plays an important part in the building of a perfect cheese or package. Too great a weight or pressure or friction—if a flannel tension is used—may cause the tube to bulge at the ends, giving it a poor appearance, see *B*, Fig. 2, even though its subsequent running off may not be affected adversely; or, it may prove too great a strain on the yarn and cause frequent breakages which in turn will cause a deterioration of the quality because of the abnormal number of knots. And conversely, too light a tension weight, pressure, or friction, will build a soft, spongy cheese which lends itself more readily to raveling than a firmer cheese does.

There is also the matter of yardage to consider in relation with the tension. A heavy tension, by building a firm package, will enable a greater quantity of yarn to be put on the same size cheese than a lighter tension. For the reason that the maximum of yardage, consistent with good winding and subsequent good unwinding is a desideratum well worth striving for, and it will pay to do a bit of testing to find out just what the best tension may be, making a package like *A*, Fig. 2.

Tension perhaps plays a more important role in ply yarns than where only single yarns are wound. In multiple winding, it is imperative to have a uniform tension on each of the several ends which go simultaneously to the tube. Otherwise, an uneven, cork-screwed product will result which would ultimately go into waste—expensive stuff when it gets to this stage.

The better grades of parallel package yarns are generally cleaned—made free from slugs, bunches, and other extraneous matter which detracts from the highest quality of the goods. Most modern, fast traverse winders are fitted with cleaners, slug catchers, or clearers, as they are variously called, the latter name being especially popular in Britain.

Establishments that wind a variety of counts of divers quality should experiment with the settings of the cleaners and once a standard has been settled upon for any one count and quality, it should be recorded officially, and used from then on as the standard for that count and quality until it has been officially, for good and sufficient reason, deemed advisable to change it.

It must not be forgotten that the cleaners control, more or less, the production of a spooler or winding machine, on account of the breakages that occur with the setting of the cleaners. Therefore, the extent to which it is advisable to clean the yarn must be decided upon and

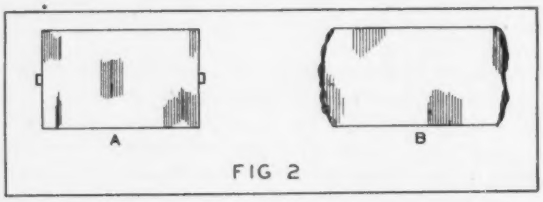


FIG 2

a standard set for a guide for future use. Any firm that does not do some research work in this matter is not fully aware of the possibility of saving money that it contains.

To illustrate: let it be supposed that a firm is making tubes for a customer. A sample lot is sent for approval by the customer. It contains, let us say, four slugs to a cheese, on an average. If the customer is satisfied with the lot, it would be unbusinesslike for the firm to clamp its cleaners tighter and reduce the slugs to, say one per cheese; because the production will drop, adding thereby to the labor cost and cutting down the profit on the goods. Of course, if the profit is so large that the firm feels that it can afford to clean the yarn more thoroughly, why that is a different matter!

The subject of knots is always an interesting one in winding, since the ideal of every winding section is to produce knotless tubes. Knots are usually of two types: ordinary spooler knots, and weaver knots. They are, fur-

thermore, subdivided into hand-made and machine-made. In each division there are problems that arise which require care in their solution.

Length of knots is a good matter for consideration, since some customers are strong for small, neat looking knots; whereas, other customers care not so much about the size or appearance of the knots. Packages for the first type of customer require constant attention and following up to get results, even with knot-tiers, and when it comes to getting good knots from hand tying, why the old saw about eternal vigilance being the price of success can quite properly be resurrected again.

Cotton Spinning in China

A British Viewpoint on Chinese Customs and Practice. Some Interesting Comparisons with the Methods and Results in Lancashire Mills

BY A LANCASTRIAN.

My first sight of Chinese cotton mills was from the deck of a P. & O. boat as she sailed slowly up the Whampoo River on a starlit Sunday evening. I thought, in outward resemblance at least, they were not much different from Lancashire mills. The majority of them were well lighted by electricity and black smoke belched forth from their chimneys. It made me feel quite at home to see this sight after a six weeks voyage devoid of the Lancashire town atmosphere. Perhaps the chief difference that one noted was that the majority of them were of one or two stories high, seldom three, and the buildings were made of concrete. The familiar sight of the loading crane hanging out from Lancashire mills was absent, but more anon.

On entering the cotton mill I was designated for, the day following, the first employees I saw were not Chinese, but Indian (Sikhs). They are employed as watchmen and weigh shroffs. They also serve a useful purpose as interpreters, being able to speak Chinese as well as English and when entering the various rooms where carding, spinning and reeling respectively took place, there was a general hubbub, which at times amounted to shouting. I afterward found out they were shouting "Shing Sumau Sau" which I was told meant new foreigner come. My studies of the Chinese language since, bringing me to the conclusion that "sau" means old and "mau" means cat. It is evidently a slang term for foreigner, the correct word being "Naa kun ning."

Ignoring their shouting and being introduced to the responsible Chinese in charge of the various rooms, I continued my walk through the mill.

My first impression was that this was an ideal mill in which to show my worth. The saying that a new broom sweeps clean was going to be borne out in actual fact. I had been told, previous to sailing, that I would not be of much service to the firm until I had been there 12 months at least. I was beginning to consider that statement all bunkum. Practically everything I saw was all wrong, and a disgrace to the Lancashire men who had preceded me. I was all aglow with ideas and improvements. On second thought, and being told by the responsible head to go slow at first, I did not set the Thames on fire, or the Whampoo it would be here.

The first difficulty was the language. I had been told that the No. 1 men in each department could speak English. The majority of them knew a few words, but their vocabulary is very limited. It takes a few months to understand them, and I doubt if some foreigners ever do get the hang of their pidgin-English. When a chap says to you "Today yesterday more warm," to let you know it is colder today than yesterday; or, "No. 2 woman come go, have go all same foreign joss house," to make you understand the No. 2 woman has been there and he has granted her leave to go to the Catholic missionary church—it is bewildering for a time.

The Chinese language is rendered very difficult to anyone who attempts to learn it by the numerous dialects spoken. When you think you have learned a sentence correctly, say in the Shanghai dialect, and you speak it to some Nimpoo or Pootung people who reside in Shanghai and work at your mill, and they fail to understand you, it is very discouraging.

The Japanese here get the hang of the Chinese language much quicker and easier than people of the Occidental races, hence, they have no necessity to have Chinese No. 1's in each department, but employ their own nationals.

This knowledge of the language is sometimes stated as the reason why they obtain a better production per spindle than the other mills here; it may be to a certain extent. Other contributing factors are that they use a better mixing of raw cotton; they keep their machinery up-to-date in every detail; and they pay slightly better wages to the operatives, which attracts a more efficient operative. The other mills do not attempt the same supervision and provide seats for the operatives' use. I presume it is a subject for argument among the various operatives as to which is the best from their standpoint.

But to get back to the mill. There are coolies unloading at the mill jetty loosely packed bags of local Chinese cotton. They carry it into the mill on their shoulders, each bag weighing about 160 to 200 pounds. American and Indian bales, which are also used, require three coolies and a bamboo cane three inches thick. At one mill here they installed a crane for hoisting the bales up into the mixing room, but it is not used as the coolies assert it would throw them out of employment. The owners of this mill were evidently optimistic as regards the speed of Chinese evolution. It is a very unsatisfactory method of transport and more expensive than in England, where cranes are used.

The cotton is weighed in by an Indian shroff and samples taken for moisture content chiefly. It may contain up to 18 per cent of moisture; 10 per cent is allowed. In 1923-4 the testing house here passed 40 per cent of the samples submitted; in 1924-5, 34 per cent passed; in 1925-6, only 17 per cent passed, so it appears as though the Chinese farmers are trying to sell more water each year. A No. 1 man told me that at his homeside (Compoo) that

small boys fill their mouths with water and squirt it on the cotton while the farmer is packing it, previous to taking it for sale. It is quite possible that this statement is true, as a large quantity of cotton is grown in small quaintities, half a mow (36 square feet) here and there by individual farmers.

The only real good characteristics about the Chinese local grown cotton is that it is clean and white. If one desires to mix it say with American, or generally Indian chiefly, the latter is done for a 14s warp mixing, it is advisable to have bin mixings and let it age for a few days.

Three coolies are employed to attend to two bale breakers and open the bales for a production of 20,000 pounds for 12 hours. In the mixing room one coolie will attend to the feeding of one hopper feeder. An extra coolie is employed to oil these four hoppers, piece bands for them, etc., and I have seen the evener roller band crossed and hence the evener roller running in the opposite direction before he would cut the band down and piece it up to take the slack out. On another occasion all the evener roller bands were knocked off and I was told they had done that because the scutching room was short of exhaust laps. On stressing the importance of the evener roller I was told that by thickening the exhaust laps up it made the finishers go slower and it would be all right. This method was being adopted by a supposedly efficient coolie who had had charge of these machines a few years.

The scutching room is also in charge of a No. 1 man assisted by two No. 2 men, a lining up fitter, a lap weight shroff and a coolie on each exhaust and finisher. There are four exhaust openers and eight finisher scutchers, so with this large staff of men, one would naturally expect good work. It is essential though to be always on the lookout to see that the droppings are gotten out and to weigh a few of the laps personally. I have seen a piece of bale iron bent to form a spring and held in position from the stationary clearer on top of the calender rollers, and hanging down so that it would keep the excessively big lap, that was being made from coming into contact with the cotton between the calenders.

The width of the scutchers and exhaust are too wide apart for making big laps. Forty-five inches is too wide, as the coolies being on an average of short stature, they damage them by their method of carrying. The loose shell roller is adjudged by these people to be of no service at all, and one has to keep a lookout, otherwise they will leave them off.

The lap weight shroff, who is sitting down all the time, is supposed to reject any laps one pound wrong either light or heavy. He will generally fall asleep, especially so on the night shift. Due to short time working, only three finishers were necessary to run at night time; a No. 2 man and an oil coolie were deemed enough to attend to this room, in addition they had a coolie on each machine to do the ordinary routine work. The lap weights were terrible and the lap shroff was sent for. Their idea is to keep as many people employed as possible, or at least on the pay sheets.

Coming to the carding engines, we have a No. 1 man in charge of 130 cards, assisted by two No. 2 men, a fitter with two coolies and six oil coolies. In addition, there is one coolie to look after eight cards and two coolies to bring the laps in from the scutching room. The No. 1 is supposed to see that the fitter takes down the back of three cards per day, cleans and resets them; also that the No. 2 men do the grinding regularly. The oil coolies do the stripping at the proper time and oil the cards.

The production per card per day of 12 hours is 200 pounds and is very low when one considers a 20-ounce per yard lap is used, the doffer speed being 12 r.p.m. and the diameter 26 inches. All the latest accessories to keep the cards in perfect condition are used, namely, cylinder disc grinder before reclothing, licker-in teeth straightener and grinder, two automatic flat grinders and a coolie in charge all day long, changing a fresh set every two days.

With all this complement of men and machines one never feels satisfied that all is well on the cards. The ropes for driving the fans which change the air, and incidentally remove some of the dust, will be knocked off immediately it is a little cold outside. Fresh air they do not understand, or wish to understand, is my summing up of the matter after talks with them.

A fire recently took place on a card and spread to the next one. The first thing they did was to put the strap on the loose pulley and go for the fire bucket. Their negligence of not keeping the buckets filled was a happy coincidence in this case, otherwise a fillet or more would have fared badly. Before they had gotten the water I got sand and had the card running before any damage was caused. A few buckets have since been filled with light sand over by the cards. The repainting of the buckets was done at the same time and it was made a serious offence for them to be used as washing buckets. "Fire bucket" was painted on in English and Chinese characters. One enterprising evening school student evidently thought he would show off his talents and he painted on in English "Selfish of service without reason."

A very wide range of temperature and an excessive percentage of humidity is experienced, and the card fillets suffer accordingly. Slack fillets are conspicuous and one has to be vigilant and attend to them repeatedly. At some mills here it is the practice to stitch the fillet when it breaks by three fold yarn, and when put on again to glue over the piecing. The wire in these mills is worn down on several of their cards beyond the angle of the wire. In one mill the distance from the front calender rollers had been shortened by cutting the framework away so that the web would carry from the doffer to the calenders. The doffer end flats had also been turned down to enable the short wire on the fillets to be ground without the horsfall touching the end of the flats. It was quite a novel way of overcoming a difficulty, but the web was terrible. It didn't matter much about the appearance though as it was to be made into a 10s waste yarn and ultimately to be used for carpet backing. The low speed of the doffer of 6 r.p.m. discounted any saving they thought they were making by using these old fillets. The emery on the horsfalls is repeatedly ruined by the practice of coolies thinking the shell of the horsfall requires oil.

On the drawings an excess of operatives is to be noted in comparison to Lancashire, one woman tending one head, and she is supplied with sliver from five cards, occasionally six. She is provided with a seat, and at one mill the majority of the stop motion spoons were packed with wood by the drawing women to keep the machine running. The object of so doing was to enable her to keep sitting down until one or two ends required attention.

The top flats and underclearers are picked clean only

when told to do so, unless some responsible person is knocking about. Washing of clothes, feet and slippers is not forgotten, the reason being because there is an unlimited supply of hot water at the mill, whereas, at home the operatives have to buy hot water from a shop, in the majority of cases.

Wrapping of the drawings takes place every four hours and a dent difference in the four to six yard wrappings taken from the finisher is quite a common occurrence in some mills. An oil coolie attends to the wheel changes and does the oiling of these machines, viz., 22 heads of 7 deliveries for the 130 cards. A fitter and two coolies are employed continually, cleaning and lining them up in rotation.

The fly frames are in charge of a No. 1 man, two No. 2 men, 4 oil coolies, 2 No. 1 women, 4 No. 2 women, and two fitters, and 4 coolies do the scouring and lining up, etc. There are 20 slubbers, 27 intermediates and 58 rovers, and on each frame there is a woman or girl, assisted by boys and girls known as doffing assistants.

As in the preceding machines, with this number of people one would expect really good work, but it is a question if ever a single move is made unless they are told to make it.

The fly frame operatives receive a standing wage, and also a small bonus on hanks produced. The various methods of keeping the indicator going are worth mentioning. Disconnecting the clock from the front roller and pushing the wheel around by means of a thin piece of bamboo is one way; another method, much quicker, is to put the small wheel up against an empty bobbin on the spindle. To overcome this the whole arrangement has been cemented over and requires chiselling off each time scouring takes place. The only way though to prevent their piecing up on a rover without stopping the frame, is to sack them when they are caught.

Maybe there will be readers who are unacquainted with the method of piecing up on a roving frame without stopping the whole frame, so I will give the idea: Stop the spindle underneath the bobbin rail by hand, pull the bobbin and flyer off. Twist a length of roving from the bobbin and thread the flyer with it; with one hand stop the spindle again and with the other hand replace both flyer and bobbin together; release the spindle and piece the end up to the roller. The objection to it is when the piecing comes through the rollers in the spinning room it refuses to draw and spoils the leather roller. At the change of shifts they will let the frame run on and make a too large doffing in their eagerness to get hanks. Suggest to them to have two frames and receive double pay and they consider that you are asking them something impossible.

Coolies are employed to the number of six to do nothing but sweep up all day long. Another set of ten coolies do all the carrying of the bobbins on the slubbers and intermediates at doffing time.

The method of piecing up a broken end differs from the Lancashire fashion in the majority of mills. They piece a length of roving up to the rollers, twist it and then pass it down the flyer and lastly piece it to the bobbin—two piecings, whereas in Lancashire there is only one.

A case of changing from bobbin-lead to flyer-lead came under my notice, and because of the difficulty of piecing up, three girls were employed on one frame for a month, until they got acquainted with the new conditions. The management told me they were enabled by this change to run three teeth faster in the spinning room. This idea appears to have a large number of adherents in America on short stapled cottons, and the majority of Chinese owned mills appear to keep more in touch with American practice. Maybe it is due to the numbers that are educated in America.

The spindle speeds average as follows: Slubbers 640 r.p.m. Intermediate 790 r.p.m. Rover 1050 r.p.m. The turns per inch are: Slubbers, 0.625-hank roving, 0.96; intermediate at 1.19-hank roving, 1.65 turns per inch; rover 2.77-hank, 3.25 turns per inch. These are the particulars of one mill to produce roving to spin 16s counts. It will be noted the turns per inch are excessive in comparison with the Lancashire short staple spinning mills.

The proportion of preparatory machinery to spinning spindles also testifies to the operatives' inefficiency. The proportions are on an average for counts 16s: One card to 121 spinning spindles; one delivery of drawing to 275 spinning spindles; one slubber spindle to 25 spinning spindles; one intermediate spindle to 13 roving spindles; and one rover spindle to 4.5 spinning spindles. The average hanks produced per spindle per 12 hours are, on an average slubber, 10 hanks, intermediate 9.0 hanks, and rover 7.3 hanks.

From this one is able to deduce that the proportion of intermediate spindles coincides with the approximate number in Lancashire mills on the same counts. The other figures are well above the requirements of a Lancashire mill spinning the same counts. My observations bring me to the conclusion that to get better work it would be advisable to increase the intermediate spindles and decrease the slubbers. The average stature of the Chinese operative being smaller, it is no easy job to try and eliminate singles at creeling time.

In one mill of which I received particulars, there were 11 roving frames making 3.1 hank roving and producing 7.5 hanks per 12 hours. The 11 frames of 160 spindles were producing from these figures 4100 pounds of roving. The average yarn production was given as 3,500 pounds per 12 hours. This leaves 600 pounds or 14 per cent of waste to be accounted for by stopped spindles, crow laps and small bobbins and waste in the creeling room, and perhaps loss of moisture.

In the spinning room the elect of the Chinese mill operatives work. Whereas, in Lancashire, it is generally the best dressed operatives in the reeling and winding departments. Here it is vice versa; we get a poorly clad operative in the creeling room. An elderly Chinese No. 1 man told me the reason was that the spinning room girls were Shanghai born and the reeling room people chiefly Nimpoo or Pootung country people.

There is generally a shortage of operatives in the Summer and the migration of these people account for a certain amount of the shortage. A family of four came for ten years in succession to do reeling, and on inquiring as to where they were last Winter I was told that they had no necessity to come any more, as by living cheaply while in Shanghai, farming in Summer and having good joss with their crops, they now owned enough land to keep them going as farmers. Whether it is correct or otherwise, we have men who own land in Shanghai worth 20,000 taels per mow, approximately 2,500 English pounds per 72 square feet, who work for 30 dollars (Mexican) a month,

(three English pounds).

To get back to the spinning room. Here again a No. 1 man is in charge assisted by four No. 2 men, 8 No. 1 women and four oil coolies. The spindleage is just over 42,000 in this mill, but two more coolies, designated repair coolies, find something to do in addition to the staff mentioned. A fitter and three coolies also find employment lining a frame up every three days, and a set of scouring coolies clean five frames per day; banding, sweeping, roving and yarn coolies to the number of twenty, are also employed.

The actual spinning is done by girls, and one girl will attend to 200 spindles, or two girls in one alley. The No. 1 woman is responsible for these girls' work and she keeps her section fully staffed. She is also supposed to see that there is no winding on with these spinners, but a glance in the reeling room will show there is neglect, especially so if the spinning is a little worse than usual.

The driving of the frames is chiefly by ropes, manufactured by hand on the premises. The spindle speed is 8,000 r.p.m. spinning 16s with 19 turns per inch; 10s waste is also made in some mills, and they get 95 pounds strength; 14s warp about 95 pounds; 16s reeling about 80 pounds; and 20s about 60 pounds.

Seats are provided all the way around the spinning room as in the card room, and needless to say, with such a small amount of work to do, they are well patronized.

The reeling rooms present a very mixed appearance of operatives, anyone from 13 years of age and upward, of both sexes, are seen. Both hand and power reels are used. There are four shroffs and 10 No. 1 women whose duty is to see that the work is done properly, but short reeling and big knots are seen, especially so with the power reeling. These operatives are paid piece work one dollar Mex. per 150 pounds of 16s, in addition they receive a nice allowance for each day they work.

Coolies do the bundling and packing into 400-pound bales. A colored ticket is put in each bundle of 10 pounds and may represent a golden dragon on a blue background or some other eccentric design. Also a small knot of 3½ ounces is put in as extra weight or cumshaw, a gift.

The tendency at present appears to be to build a weaving shed alongside the mills and no doubt in a few years reeled yarn for sale up country for hand looms will diminish.

A small mill at Sung Ming Island a few miles up the river from Shanghai receives raw cotton from the small farmers in the vicinity and pays them for it in bundles of yarn.

The hours and wages of the operatives enumerated alone is one of the topics that arouse interest. The hours of twelve per shift are long, but until the efficiency of the operatives is increased one cannot see much hope of a reduction. The hours in the mechanics' shop for example, are from 7 A.M. to 5 P.M., but it has not increased efficiency at all. There is a staff of 13 to cope with the work of a 42,000 spindle mill and four carpenters find employment, in addition to six mason coolies and four painters and whitewashers.

The wages are in accordance with the efficiency, low, 40 cents to $1.50 Mex. per shift of 12 hours. These low wages are put down as one reason why Lancashire is losing ground. An analysis of this matter will show that the labor costs per pound of yarn spun are not as low as one would imagine from the wage.

I mention forty cents Mex. as the lowest wage. This is paid to a drawing frame tender. She has five cards to supply her with material and each card produces 200 pounds per 12 hours, so the total weight she attends to for the 40 cents Mex. is 1000 pounds at one head only. A girl in Lancashire attends the whole three heads, so the woman here only does one third of that 1000 pounds of finished sliver, or 333 pounds. The mills I have seen and worked at in Lancashire have drawing material from fifteen cards with an 8¾ hour production of 135 pounds per card, so actually in Lancashire one girl gets a total weight of drawing material through the three heads of $15 \times 135 = 2055$ pounds. So by dividing the 333 pounds into 2055 pounds we get the relative efficiency which is 6. The cost of labor is therefore 40 cents Mex. (one shilling) $\times 6 = 6$ shillings to get the same amount of work done. Added to this cost there is the cleaning, sweeping and oil coolies' wages, the extra machinery required for spinning and the extra supervision. The finished sliver is then not to be compared with the Lancashire product.

The efficiency and costs per pound would coincide with the foregoing illustration practically throughout the mill. Upon inquiry as to why one woman could not look after at least two heads of drawings and so receive double the wage, I was told it was not the custom. I pointed out that one girl in Lancashire could manage the whole three and have 15 cards on. I was told that the staple was "more long," as though that played an important part in the running of drawings.

The question of employing small children in the cotton mills here is occasionally mentioned in the press. In most mills it is a toil keeping them out, as far as I can judge. In British owned mills an Englishman stands at the gate half an hour each morning and night and compels the watchman to do his work thoroughly; that is, to prevent small children under thirteen years of age from entering.

The climatic conditions for cotton spinning was stated by a Chinese to me to be only suitable eight months out of the twelve. A few figures will give a little idea of the conditions. The range of temperatures are: card room 100 degrees F. dry bulb and 94 degrees F. wet bulb, which equals 75 per cent of humidity in Summer; in Winter 76 degrees F. dry bulb and 61 degrees F. wet bulb, which equals 43 per cent of humidity. The spinning room ranges from 111 degrees F. dry bulb and 89 degrees F. wet bulb, which equals 48 per cent of humidity in Summer. In Winter the same room shows 64 degrees F. dry and 55 degrees F. wet or 55 per cent of humidity.

From the highest production to the lowest in any one mill is about 20 per cent, and during the months of July and August when you get a hot, damp day, production will perhaps drop the 20 per cent. The webs on the cards go cloudy due to the sticky conditions, and the whole mill appears to have gone bad in a day. The most trouble is experienced on the fly frames. The material sticks in the flyer leg. When it is 96 degrees F. dry and 90 degrees F. wet bulb that is 82 per cent of humidity, it makes one wish there was a drying system in the mill which would dry without heating. Occasionally steam has to be put in when these conditions prevail. Hanks in the card room will drop down about 25 per cent. In the spinning room the travelers are sticking and at doffing time a large proportion of the ends are broken. The yarn is absorbing

this moisture greedily and you have to come down on your pinion gear when you wish to be going up.

The Chinese cottons are terrible to run on this type of a day. The American and Indian cottons do not absorb the same amount of water, due to their percentage of wax being greater, I presume.

Although a position out here is no soft job and one is continually toiling to improve and teach the operatives, there are incidents that occur which brighten it up.

The number of excuses one hears from them when asking leave of absence, such as: "Have got sore belly"; "Leg belong soft"; "No have chow (food); 'No can work, inside little sick"; "Left dollars at home; afraid of steal man; want to go and bring, etc." A boy was working and I noticed his big toe was sore. I wanted to send him to the hospital and have it attended to. I was told: "Maskee if no come out big toe, bad stop inside and then belong very sick."

The coolies' hair is usually cut European fashion. In Summer a large number have their heads shaved. A few of the spinning girls have their hair bobbed, but generally they use a shaving of wood from a particular tree, soak it in water and plaster it down. This solution is very sticky, smells bad, but imparts a lovely gloss to the hair. In rainy weather each person will have an umbrella, the women wearing no head gear at all. A few coolies and the No. 1 men will wear caps. The fancy slippers they will pull off and carry if the ground is wet and walk barefooted. If coming from home to the mill and it is raining, they will wear a very heavy hob nailed boot about three sizes too big. This boot does not fasten or clip around the leg at all.

In hot weather a piece of an old coat will be stuck on the ends of quickly revolving shafts, namely, the end of the licker-in and beater shafts, to act as fans. It is an extremely dangerous practice and is prohibited. On pay days, due to the amount of counterfeit coins in circulation here, the No. 1 man will be asked to adjudge if the coin is A-1 in doubtful cases. He will try it by ringing it on the floor, and if not satisfied will hold it loosely in his hand and blow from his mouth at the edges, then quickly put it to his ear to listen for a sound.

There are a few of the young men employed in the mills who attend evening schools to learn English chiefly. The firms who employ them pay all the expenses.

Occasionally one comes across an application for a position from an eager student, and I here give two examples, and while rather humorous, there are very few Englishmen who could write a similar application in Chinese characters, and the two persons who wrote these applications can write one perfectly.

"I venture to write this letter ask you business you grant a business because at Shanghai have hoity toity cannot find a business. I study English two years. I am 18 years of age you must find business or if that introduction and only gratified. My handwriting you will see from this letter."

This second one was typed.

"I am Wang. It is for my personal benefit that I write for a position in your honorable firm.

"I have a flexible brain that will adapt itself to your business, and in consequence being good efforts to yourselves. My education was impressed upon me in the Peking University in which I graduated No. 1.

"I can drive a typewriter with good noise and my English is good and great.

"My ref: are of the good and should you hope to see me they will be read with you with great pleasure.

"My last job has left itself from me, for the good reason that the large man has dead. It was on no account no fault of mine.

"So honorable sirs, what about it?? If I can be of big use to you I will arrive on some date that you should guess."

It is a great pity that young Chinese men have to wade through and study Chinese characters to be able to read. They lose a vast amount of time in this branch of study which could be better occupied studying a trade, or problems which confront China at present, and I am confident every Britisher in China at present would give them a lift on the way.

"Grammar of Textile Design."

This textbook covering the fundamental principles of structural design in woven fabrics, and their application in the production of cloth, has been revised and issued in a third edition. It is written by Harry Nisbet, F.T.I., and is prepared chiefly as a text-book for students of weaving and designing, containing at the same time much information of practical utility to designers, salesmen, etc. The current edition has been brought up-to-date. Among the new subjects covered are: several American types of flat steel doups and Jacquard harnesses for gauze, leno and other varieties of cross-weaving and a new warp ondule motion applicable to ordinary looms.

Rayon is considered in a new chapter, with illustrations reproduced from fifteen actual examples of cloth, illustrating the decorative value of artificial silk in the embellishment of textile fabrics. This chapter also describes the essential features of the chief types of rayon and their reaction with dyes in the production of multi-color effects by cross-dyeing. It also gives a comparison of the properties of natural and artificial silk. D. Van Nostrand Company, Inc., 8 Warren St., New York City, are the publishers. The price is $9.00 per copy net.

Power Transmission Association.

The Power Transmission Association, composed of members of the transmission industry, held its first annual meeting in New York City in December. President W. H. Fisher reported encouraging progress since the organization one year ago. The body was formed to promote the efficient and economical distribution of power, and was organized along three lines: To develop accurate and authoritative information regarding power transmitting problems; to disseminate authentic information through planned publicity; and to further the interests of affiliated manufacturers and distributors of power transmission equipment. A year of activity along these lines, as well as an increase in membership, was shown in the reports at the annual meeting.

J. R. WOOD, who has had charge of the silk department of the No. 3 Mill of the Republic Cotton Mills, Great Falls, S. C., has accepted a position with the Slater Mfg. Co., Marietta, S. C.

How Much Profit?

BY LUTHER H. HODGES AND HARRIET L. HERRING.

The article below is one of a series which has to do with the fundamentals of business, or, more properly known as Industrial Economics. These articles are being published from month to month. Each one is a unit in itself, although forming an integral part of the entire series.

Practical mill men like practical material and these articles are designed to meet the needs of textile operating executives who are interested in knowing more about the laws governing business and industry. The entire series has already been used by a large cotton mill organization in the South in its educational work, and this organization found the material to be very practical and effective.

Each article lends itself to discussion by groups of mill men, as well as being helpful and interesting reading. Naturally the articles are brief and in attempting to cover this large field, only the most important points have been considered.

Rents, Profits and Other Incomes.

We again refer to the four factors in production; namely, Land, Labor, Capital and Management. We have discussed each of these in separate articles and have also considered the rewards of capital and labor; namely, interest and wages. A previous article was devoted to wages and interest as the reward of Capital was briefly discussed in the chapters dealing with Capital. This leaves for our discussion the particular items of Rents and Profits.

In considering rents, we feel that attention should be called to the fact that the term "rent" is very often misunderstood—its full meaning is not always appreciated. Our superficial understanding and definition of rent implies that it is the return for the use of a definite piece of land or building, at so much an acre for the land or so much a month for the building. In our thoughts about rent, we think of a limited plot of ground, or a structure for the use of which so much money is to be paid. In fact, the common use of the term "rent" has brought us to think of it in this limited sense.

However, rent has a much broader meaning. It is the reward of land, but we must remember that land includes mines, quarries, streams, and above all, the raw materials from the land itself. Looked at in this light, the term "rent" assumes greater importance. Rent is an inclusive term—it is used to cover the returns from the use of an acre of land or a two-story building and it is also used to include the payment for raw materials used by manufacturing industries. In this connection, we might well observe that a textile mill pays "rents" for so many thousands of bales of cotton a year. This is the main product of land it uses. Present-day usage of economic terms causes us to consider the land and buildings we use as part of our capital investment for which we pay so much "interest" rather than "rent."

What Determines Rent.

"Rent," according to Mr. Seager, "is the term given in economics to the share of income that is assigned or paid to the owners of land, and other gifts of nature for the use of these factors." The fact that the use of land demands a share in the income serves a very useful purpose. It fosters a tendency for land to pass into the hands of those who can pay the most for it and who, in turn, can put it to the best use. For instance, land may be worth more for farming than pasture and be able to realize greater "rent" if so used. In such cases, the land should go into the hands of persons who are in position to get the most out of it. This puts it up to the man who owns land to use land for the most economical purposes. There is a difference in rents even when different pieces of land are used for similar purposes. This comes about because of the fact that all produce of a given kind sells on the market at what is substantially the market price. Consequently, the land on which produce can be made more cheaply or marketed more cheaply after made, is worth more to the user and such land demands a higher rent. A man who cultivates a more fertile farm has an advantage over the man who cultivates a poor one because he spends less effort in getting the produce. This comes, not from superior efficiency of the man himself, but from the *land*. In other words, the land has produced a "surplus." This surplus is called rent and is the share of income which land produces. "Differences in rents of different pieces of land tends to correspond to differences in fertility or desirability of location, or both. Farmers who own their own land should reckon part of their incomes as rent, this being the equivalent of what they could get from another for the use of their land." (Roberts).

The great increase in rents and land values for the past two decades has caused much worry and comment. We are all acquainted with the fact that building rents have increased enormously and that farm lands have become dear. In 1850 the price per acre of American farms was $11.14. In 1900 it was $19.81, but by 1920 it has gone to $69.38. What causes such increases? The fundamental cause is based on the fact that the supply of land remains the same while the population increases. There is a greater demand for the farms than there are farms to go around. The farmers themselves cause land values to increase by their scramble for the farms!

The Famous Jug of Liquor.

The story is told of the Indian who, in return for a jug of liquor, gave the whole of Manhattan Island. The land which we know as Manhattan Island has not increased in fertility and the first owners have not, through their efficiency, increased the value of this land, but it has nevertheless increased tremendously in value. This increased value is "unearned increment." There are many proposals regarding what is to be done with this increase in values which comes from no effort of the owner; it has been suggested that all increases of this nature be taxed for their additional values and such taxes be turned into the public treasury. According to Professor Taussig, "The movement for taxing the unearned increment on urban sites is certain to grow in strength and to bring results in legislation, but the precise mode in which it will proceed will be affected by compromises and half measures."

Profits.

In considering profits, let us bear in mind that profits represent that part of income which one receives after all expenses of production have been deducted; namely, wages, interest and rents. To the average business man, profits are the most interesting, the most important. He pays out wages for labor, he pays for the use of capital and his rents are a definite expense which he knows he must meet. But profits belong to him, if there are any left.

His profits, however, are not predetermined, they are most variable. It is of particular interest to note that profits make up the only factor of reward that cannot be more or less definitely determined. The business man pays the standard wage, the interest rate is determined by the market, and rents are decided in advance. Profits, therefore, depend on how well he handles his business and how well he handles all the factors in production. The hope of profits is the great incentive offered to the enterpriser or entrepreneur to take his risks, to organize and run his business. Profits as a share in business go to enterprise for its part in production.

In the discussion and study of profits we must understand that there are two distinct types of profits in modern industry. These are, "competitive" and "monopoly." Competitive profits are the most common and will receive most of our attention. A business making competitive profits is obliged to meet the competing firm in the purchase of its materials and supplies, the hiring of its labor and the securing of its capital and setting its prices. It can exercise no full control over any of these factors and it is only by the superior management of the various factors that its profits are made larger.

In this competitive game, the enterpriser puts his life and work, and according to Mr. Clay, the profits he gets "are his share in the flow of wealth after all expenses are deducted." A man will naturally gravitate towards the business that promises the most profits. The size of his profits is the test of his success in the business world and determines whether or not he will remain in business. In this connection, it might be added that profits do not form the only reason that men go into business because there is in some men a desire for "serving" the people, a desire to produce in order to aid society. Further than that, there is a pleasure and joy to some people in winning the approval and good will of people by successes. It must be admitted, however, that these more social or sentimental reasons are generally ascribed after the profits are assured, for nobody wants to risk losses and failure without at least an *opportunity* for profit.

The question naturally arises in a discussion of profits as to how large they really are and how much is a proper return in the way of profits. So many people confuse interest with profits and consider that a high rate of interest makes up a man's profits. It is not strictly true. As has been mentioned before, the interest rate is fairly well standardized at any given period but profits are not standardized. Interest returns may be greater than profits but they do not deserve to be. The enterpriser who takes the risks of business deserve a greater return than the mere lender of capital. This is better appreciated when it is considered that an enterpriser generally puts his own money in his business and stands to lose all he has before the bond-holder is in danger. Many men who have capital do not care to invest it in their own business, but will lend it for a normal return. The enterpriser who borrows the money and risks his own fortune and reputation in a business deserves to make profits not only on his own money but on the borrowed money.

In speaking of interest, we generally think of a return of 4 per cent to 8 per cent, or an average of 6 per cent. In considering banking, we find that its profits will perhaps net a return of 8 to 10 per cent. What are the profits of industry? According to figures given by George A Roberts of the National City Bank, the profits of the corporations of this country increased from about three billions of dollars in 1909 to nearly eleven billions in 1917. The war years were abnormal since the corporations (31,000 were tabulated) made on the average over 21 per cent on their invested capital. It is fairly generally estimated that the earnings of manufacturing companies for the past 20 years in the United States have averaged around 11 or 12 per cent. However, it is impossible to determine what profits will be at any time. The returns one may expect are indefinite and uncertain. There is always the risk that there will be a loss instead of a profit. Further than this, sometimes the so-called profits are "paper" profits which are wiped out by falling prices which cause inventory shrinkages and reduced sales.

A monopoly in Economics usually means the control over the supply of an economic good which enables the monopolist to regulate its *price*. However, the monopolist's regulation is not absolute because conditions of production are always to be considered and there is also the ultimate consumer to consider. One cannot go beyond the consumer's demand and willingness to pay.

The main forms of monopolies are (1) Personal monopolies such as an artist's own pictures. (2) Legal monopolies such as the Post Office. (3) Natural monopolies of situation such as the only picture show in town. (4) Natural monopolies of organization like telephone and telegraph. (5) Capitalistic, like our trusts, and (6) Labor monopolies like our unions.

All of the monopolies mentioned may make undue profits, when compared with competitive profits, but the returns are always dependent upon certain outside influences, such as government regulation, public opinion and the law of monopoly price itself. It is true even in monopoly products that the price is governed by the demand or vice versa and that there is a certain point beyond which the price cannot be put nor the product extended.

There is a law known as "The Law of Substitution," which the consuming public will not hesitate to use in order to curb monopoly prices. If the prices get to such a point which the public does not feel is justified and they are unable to get the product at a lower price, they will try another product as a substitute.

And in addititon to all these, there is always the bugaboo before the monopolists of potential competition which holds monopolies in abeyance.

As a part of "unforeseen profits" we might consider the death of a king bringing extraordinary profits to a dealer in mourning goods, or a gasless Sunday bringing special profits to a livery stable, and so on. In addition to these profits, there are other forms of income which we should consider. Among these are inventions, royalties, "Futures," gambling, weather, wars, inheritances, etc. We might also consider under this head, the income a man receives who is retained by an organization for the "secrets" or inside dope he has.

In considering incomes from "futures" or trading on stock exchanges, we could hardly call these profits in the regular sense except possibly where people make such work their regular business.

It is of interest to note that the past few years have shown decreased profits or dividends and on account of government regulation, higher taxes, increased and keener competition, and the larger share given labor, the future

promises even smaller profits to the enterpriser. This is going to mean one of two things, or a combination of the two—that fewer enterprisers will be willing to assume the risks of business because of the reduced profits offered, or that businesses will tend to become very large in order to effect greater economies through more intensive organization. It is quite certain that business will not attract "new blood" unless it offers adequate rewards.

Mercerizing Cotton

BY WILLIAM B. NANSON.

Mercerizing, which owes its name to the late John Mercer, is one of the most important developments in the finishing of cotton that has come to us and a wide field has been opened for the use of mercerized cotton today which did not exist a number of years ago. Within the past decade further developments and improvements in mercerizing cotton have taken place, all of which have tended to increase the uses of the fiber.

Although Mercer discovered the action of caustic soda on cellulose fully thirty years ago he did not discover the glossy sheen that could be produced on the cotton, and it is only within the past few years, be it understood, that it has been found out that if a piece of cotton, which is almost pure cellulose, be placed in a strong solution of caustic soda, the soda causes the cellulose to unite with a molecule of water, the cotton shrinking nearly 20 per cent, and that it becomes nearly fifty per cent stronger and takes on a greater dyeing capacity. Not only is this dyeing capacity larger than the proportion of shrinkage and dyestuff combined, but the color is darker in itself, in other words, it takes less dyestuff to achieve a certain result; moreover the business of dyeing, which is *all* chemistry, is founded upon another chemical fact, that the cellulose molecule contains, feebly, acid and base groups which unite with the dyes and hold them fast. As to the nature of these groups we are at present ignorant, although their discovery would be vastly important.

But this is not all, if the cotton, without dyeing, but steeped in caustic soda, be now stretched tightly upon a framework so that the shrinkage mentioned cannot take place, the soda solution brings about a transformation in its constituent fibers in such a way that the fabric assumes all over its surface a silken sheen. These fabrics are known as mercerized cotton and their manufacture amounts now to an enormous industry.

The chemical substance cellulose (or pure cotton) belongs to a group of compounds which consist of carbon, hydrogen, and oxygen, in which the hydrogen and oxygen are present in the proportion of two atoms of the former to one of the latter. Since this is the proportion in which these two elements combine to form water, it was thought that cellulose and other compounds belonging to that group were compounds with water and so the name carbohydrate was given them. The different sugars and starches and a number of other substances belong to the class of carbohydrates. In cellulose, the carbon, oxygen and hydrogen are united in the proportion of six atoms of carbon, ten atoms of hydrogen and five atoms of oxygen ($C_6H_{10}O_5$), although we do not know how many atoms of carbon, hydrogen and oxygen are really contained in the molecule. We must therefore represent cellulose by the formula $(C_6H_{10}O_5)n$, where n is an unknown whole number.

The purest naturally occurring form of cellulose is cotton. The hairy material which covers the seeds of the various species of the cotton plant, when this has been chemically treated by bleaching agents and by acids to remove the organic and mineral impurities it becomes bleached and should constitute almost pure cellulose. This is one of the most valuable as well as one of the most important substances of present day civilization and either bleached or unbleached forms the basis of mercerized cotton.

It is a matter of no consequence, if bleaching is necessary, at what stage of the game either before or after mercerizing the bleaching is effected, but on most goods the bleaching had better come after the mercerizing so as to use up the caustic soda that may remain in the goods.

We must all assume that cotton in its natural state, consists of flat, twisted fibers, but when these fibers are tightly stretched and are immersed in a solution of caustic soda, the fibers swell up, become untwisted and assume a nearly straight, rod-like form. The surface of these fibers is covered with a number of small ridges which, reflecting the light falling upon them at different angles, give rise to a lustrous appearance or sheen. In accordance with these results, the highest luster can, therefore, only be produced if the mercerizing agent is able to bring about the maximum amount of swelling, shrinking, and untwisting of the fibers. Therefore, it has been found that the addition of *any* substance to the caustic soda of the mercerizing liquor is a fallacy and is no help to its usefulness.

To produce a fixed luster, which will stay, on cotton by mercerizing is a rather simple process so far as the principle is concerned; it may be effected by treating the cotton while in a stretched condition with a strong solution of caustic soda and is then washed in cold water while still stretched. After the washing has been carried on for a short time the tension relaxes and it is found that the cotton is mercerized, i. e., that it has acquired a look and gloss like silk, though not so good. Then again in the second instance and by the second way, the goods are immersed in caustic soda as before and then taken out of the soda and stretched a little beyond the original length and then washed until slack.

Mercer, himself, states in his patent that caustic lye of as low a strength as 20 twaddle exerts a distinct effect on cotton, and it has been found that treatment with a lye of as low as one degree twaddle had a considerable effect in increasing the affinity of cotton goods for dyestuffs and would produce a certain amount of shrinkage. Both the affinity of cotton for the direct dyeing dyestuffs, and the shrinkage, increase in a fairly uniform manner up to about 18 degrees or 20 degrees twaddle, but at the 20 degree twaddle they increase with the concentration at a far more rapid rate than before, and the greatest shrinkage effect is got at when the soda lye is about 45 to 50 degrees twaddle, while if the strength of the soda lye is increased above the figures given the shrinkage is less or decreases.

The results find an important practical application, be-

cause if soda of a higher degree, say 60 to 70 degrees twaddle is used, less shrinkage takes place during the actual impregnation, but on washing afterwards with water, the yarn or fabric tends to undergo a much further contraction; with the higher contraction of the caustic soda a greater strain is exerted on the arms of the yarn mercerizing machine or on the clips of the tentering machine during the early stages of washing. There is, therefore, in this case, a tendency for the cloth to rip, or of the yarn to tear, which could be easily avoided by using a more dilute lye.

Not all classes of cotton are suited equally for being mercerized, or cottons made in just the same way. Thus, in the case of yarns, the best luster by far is generally got on a two fold or a manifold yarn. This is spun from long stapled cotton Egyptian or Sea Island). Single yarns made from the same quality of cotton are but slightly improved in appearance by the mercerizing process, and are but seldom used, though of course the shrinkage, roundness and affinity for dyestuffs shows the same mercerizing effects, all but the silken gloss. The same applies to two fold yarns made from American cotton though some peelers are all right and some Mississippi brands might do.

In piece goods it is found that long stapled cotton gives us the best results, but in this case it is not necessary that the yarns should be doubled. Long stapled single yarns are good enough for this.

In the great majority of cases, the mercerizing of cotton whether it be in the yarn or whether it be in the piece, is done before bleaching, but sometimes it is found preferable to mercerize after bleaching even after bleaching and dyeing and the strength of the caustic soda lye employed in actual practice is generally between 55 degrees and 60 degrees twaddle.

The temperature of the lye has a material influence on its action on the fibers of the cotton. It may be said that the shrinkage on mercerized cotton with caustic at 122 degrees twaddle gives the same mercerization at 176 degrees F., as a lye of 24 degrees twaddle at 35 degrees F., and a lye of 66 degrees twaddle at 86 degrees F., as a lye of 42 degrees twaddle at 64 degrees F. Hence it may be stated in general that the lower the temperature the weaker the lye may be. Below 32 degrees F. this augmentation of the effect of the lye ceases as far as the lowering of the temperature goes. So far the figures show a financial advantage in mercerizing at as low a temperature as possible down to 32 degrees F., but the fact must be taken into account that when the strength comes down to 24 degrees to 42 degrees twaddle there is a weakening of the action and that with a strength of 16 degrees twaddle there is no mercerization. Nevertheless, working at a low temperature requires a corresponding cooling of the lye. This requires ice and does not pay. The installation and maintenance of this plant is expensive and one would do better at mercerizing at a higher temperature and stronger lye. The cost of cooling is greater than the additional expense of a stronger lye. As a matter of fact, some of our larger concerns have abandoned the cold process after trying it.

Ample experience has shown us that it is better to work with a stronger lye, and the best strength, I think, is 64 degrees twaddle. A stronger lye than this makes the process more troublesome without giving a better luster. Lyes that are weaker than this give less luster and lyes of 16 degrees twaddle give none.

Temperature has a great influence on mercerization and the effect is greater, the lower the temperature. This is especially true of lyes below 54 degrees twaddle. With stronger lyes the temperature does not make much difference. Thus with a lye of 64 degrees twaddle the effect is almost the same at all temperatures from 33 degrees to 86 degrees F. Hence cooling is only useful when using weak lyes. For instance a 54 degree twaddle lye has just the same effect at 86 degrees F. as a 42 degree twaddle at 64 degrees F.

Cotton yarns, of which I shall write fully, are usually mercerized in the hank. The best results are secured on yarns that have been doubled or are multifold. Yarns that are made out of long stapled cotton and those of fine counts will naturally mercerize better than short fibered stock, and it was at first thought that only Egyptian and Sea Island cotton could be mercerized, but later experiments have shown that other classes of stock may be mercerized.

I would say right here that it has never been satisfactorily explained, nor is it known definitely as yet, whether the results obtained by mercerizing are due to chemical or physical changes or both.

The operation of mercerizing cotton yarns in the hank is employed in the main by yarns intended for hosiery or to be watered or are used for embroidery or are used for colored work. It is obvious that the correct mercerizing of a piece of cotton cloth entirely depends on the shape that the yarn is in and how the fabric is made and that the mercerization of the yarn is dependent upon the single fibers of which it is composed. For this reason the single cotton fibers should be studied and none but the best for luster should be taken and used, for it must be remembered that almost all mercerizing is done for luster and appearance, though it sometimes gives other quite useful properties to yarns or cloth. The single spicer yarns used in hosiery and for other purposes are apt to dye more uniformly with the glossy two-ply yarn if they too are mercerized, although they show no luster, these and other properties have some importance with mercerizing today.

The degree of twist in the yarn is one of the greatest determining factors. If it is high the curvature of the fiber is less smooth on the surface and this is designated mercerizing twist on some yarns. Yarns for mercerizing are generally spun as singles with the twist in a certain direction and are then doubled with the twist running in the opposite direction. The angle at which the fibers cross the yarn and the extent of the manner to which they curve around the axis of the yarn, in addition to the tightness determine for a certain cotton all the properties of elasticity, strength and looks as well as their luster on mercerizing.

If we leave all the other properties for the present, the highest luster is obtained with softening doubling twists, the twists of singles having less effect. Hard twists and soft twists in the single, however, are not as good as medium twists.

In two-fold yarns, which form the principal part of skein mercerizing, it has been found that the best results in strength were obtained with a soft doubling twist, but the best results of all were obtained with a medium doubling twist and a soft or medium twist in the singles.

From the spinning the yarn goes to the doubler, where it is doubled into two-fold yarn. The ring doubling frame is the best, using the English method from the spinning

bobbins, or the Scotch method in which the yarn is wound on large bobbins in a winding frame. These large bobbins necessitate a different arrangement of the creel. The threads (two of them) are conducted down to the trough in which the pair of rollers are arranged, the lower one forming an immersion roller, beneath and around which the threads are conducted, and thence around the upper one to the thread guides and the spindles. It will thus be seen that the rollers serve the double purpose of immersing the yarn in water, and expressing any superfluous quantity of water it may have taken up. As compared with the English plan, where the yarn usually passes under a glass rod in the water, it remains a longer time in the water, and therefore is thought to get more thoroughly saturated. It would be difficult, however, to demonstrate that any particular advantage would be secured by the adoption of any one plan as compared with the other; either will do but the work must be good.

The bobbins from this machine, i.e., the doubled yarn, are put up at the reel and wound into skeins upon the reel which should be of a moderate speed, it is not otherwise possible to ruin yarn as easily as by excessive speed, the yarn may be overstrained and thus robbed of its elasticity and strength, though it may look all right.

An overspeeded reel not only strains the yarn but it breaks it, thus making a great deal of waste. A reel should therefore be run at only a moderate speed; moreover, the tension should be such as to prevent kinking and back lashing only. Small narrow skeins are preferable to large ones on fine mercerized work. On fine work skeins should not be made narrower than 1½ to 2 inches in width, and the weight should not exceed 2 to 2½ ounces. Fine work should not exceed 18 inches or 54 inches in the total length of skein. The traverse motion on mercerizing yarn is quite important. The speed of the traverse motion should be sufficient to cause the skein to be cross wound onto the reel from one side to the other at least once at each revolution of the reel and a slow traverse motion should not be allowed. The ends should be tied by hand, and there should be two bands looped through the skein in three loops. This is to preserve the form of the skein during the several mercerizing operations and greatly aid in the swift winding afterward. Please remember that all knots must be weaver's knots and must be neatly trimmed after tying both on this machine and all others.

It must be understood that an evenly spun yarn is quite necessary to good mercerizing, and that when doubled it should have a tensile strength of 135 to 140 pounds for say 40/2. As practically all of the mercerized yarn that is mercerized in the skein is two fold, the character and degree of twist is of some importance and it may be said that usually a reverse twist for the two ply yarn gives a somewhat better mercerization, but the difference, if any, is small and inappreciable.

Cotton yarns may be mercerized in the gray state as they come to the mercerizer, but they are generally either bleached or scoured before being subjected to this operation. Scouring is the process which is usually adopted.

Cotton yarn is usually obtained in bundles of five or ten pounds made up of heads, each head having ten hanks, or very fine yarn when each head has 20 hanks. The number of heads indicate the grist of the thread called the number. Thus 10 pounds of No. 60 will have 6 heads of 10 hanks or 30 heads of 20 hanks. These heads are made up into spindles of 18 hanks by the mercerizer, and through each spindle is tied a stout piece of twine or thread called a band. The bundle when banded is divided into six quantities and rolled up and tied into bundles for boiling. Thus No. 60 will give 35 bundles and 12 hanks, equal to 36, and be rolled up into size sixes or all sixes, as it is termed, 10 pounds being invariably named a bundle.

After banding, the cotton is boiled in water for two to three hours in weak soda until thoroughly wet (see scouring below). Cotton yarn may be mercerized either in the hank or in the warp (see later about warps) and at present we shall write about hanks only. Quite a number of machines have been constructed for this purpose and some of them have been patented. The very simplest form of machine for mercerizing hanks is composed of two superposed strong steel rollers on which the hanks are placed and spread out evenly. The upper roller has its bearings running in a slotted groove and it is then raised by some mechanical means until the hanks are tight all over. Caustic soda of about 60 twaddle is now run in the trough below, which comes up above the lower roller and the upper roller is caused to revolve slowly, the hanks act like a belt and cause the lower roller to simultaneously revolve. After it has run for about three minutes the caustic is allowed to drain off and the hanks are washed by spurt pipes in cold water until the yarn grows slack. The hanks are then taken off the steel arms and rinsed, in a separate vessel, first in sulphuric acid diluted to one or two degrees. This is to facilitate the subsequent washing and neutralize the alkali and then in cold water until quite neutral. The hanks can then be bleached as usual or subsequently dyed; no diminution of the luster being caused by these bleaching and dyeing operations.

When mercerizing cotton yarns for knit goods in the hank the following considerations must guide the mercerizer. In the first place the yarn must be proper for the business, including twist, stock and spinning. Then the goods must be wet out previous to mercerizing. Then comes the mercerizing itself. Then comes the after treatment. This involves the washing, scouring, washing and softening, and perhaps the bleaching and scrooping. Then the drying.

In the first place get good stock and see that it is handled right.

In the second place there are many ways of boiling out, in them all the yarn is headed up in bundles and is packed in wooden tanks overnight and gently boiled in three per cent of soda ash, or, what is better, one quart or perhaps two of Turkey red oil or monopole oil soap to 100 gallons of liquor, or, what is better still, steep it all night in a solution of about 2 per cent of diastafor at not over 120 degrees F., and wash next morning before mercerizing. Do not boil the yarn in pressure kiers or in soda. The oil or the diastafor leaves the yarn soft. The mercerizing itself is carried out by one of the various machines placed on the market for that purpose.

After the mercerizing process the tension is taken off the yarn and the skeins are removed and given a further washing with water and then with sour, then a wash, and a final soaping or treatment with a softener to give a soft, silky feel to the yarn.

The strength of the caustic soda should be 50 to 60 degrees twaddle and about 60 degrees F. and kept at this strength and temperature. The skeins are allowed to run in the mercerizing liquor for from three to five

minutes. The yarn is then brought up out of the liquor and allowed to run on the rollers for several minutes to squeeze out the excess of caustic soda. This runs back into the tank. A pan is then inserted and the mercerized skeins given a good washing with either hot or cold water from the spurt pipes above the rollers. The waste liquor is carried off by a suitable duct at the side of the machine and saved to be regenerated for further use. After the washing the lower rollers are raised, which takes the tension off the yarn and which allows of the skeins being removed.

After mercerizing, the yarn is taken to another tub and washed, soured, washed, softened and dried as told of in the last two processes of mercerizizng as given in the foregoing.

[This is the first of three articles on mercerizing. Another will appear in an early number.—The Editors.]

The Safety Organization

Inducing Safety in the Entire Working Group Saves Human Life and Suffering and Has Great Effect in Reducing Rates

BY W. M. McLAURINE.

The Safety Organization of a plant is the real key to accident causes or cures.

The Insurance Carriers in their desire to promote safety have offered certain credits for safety work. They have even outlined specifically and definitely what the demands of a standard safety organization are, and they have these rules and regulations ready for mill use. They have also outlined standard medical kits, first aid rooms, etc., so that anyone can mechanically take the book and check off his organization and first aid equipment to see whether it is standard or not. They have even prepared inspection blanks and reports, weekly or monthly reports, for the guidance of safety committees.

These are all good, but the mill that works only for standards and credits has failed to get the vision of a real safety organization. There is something beyond the possible twenty points credit that can be secured from the physical rating chart and that is having a good safe place in which to work. Safety for safety's sake is the only motive that is worth while.

The real safety organization inculcates the safety idea in the entire working group. It saves human life and human suffering. It thus modifies largely the experience of the plant and thus has the greatest effect on reducing the rate.

Statistics show that 35 per cent of the accidents in a mill are mechanical and can be reduced by safety engineering and education; 65 per cent are non-mechanical and can be reduced by education alone.

Of the 35 per cent of accidents which are mechanical, 10.19 per cent happen in the warping and weaving machines; 9 per cent plus happen on the spinning, spooling and twisting machines; 5.14 per cent happen on the cards; 2.5 per cent happen on elevators and hoists; 2.11 per cent happen on opening and picking machines; the rest happen in various places.

Of the 65 per cent of accidents which are non-mechanical, 22 per cent are caused in handling materials; 19.65 per cent are caused by falls; 8.08 per cent are caused by striking against objects, 4.5 per cent are caused by falling material; 3.39 per cent are caused by hand tools; 2.14 per cent by vehicles and so on to the smaller percentages.

These figures are copied from the compilation of a very reliable casualty insurance company and involve 6,936 lost time accidents.

Safety is a mental attitude. It is a mental attitude which not only protects the individual but it protects the group. It is impossible to have a safe working place with only the safety committee carrying the burdens. It must be an unconscious or subconscious mental state that permeates the entire organization.

There are only a few bad hazards around a cotton mill. and these are generally guarded. Cotton mill work is not regarded as a hazardous occupation, although there are potential possibilities for severe accidents, as is evidenced now and then by serious results. A steel mill, a powder plant, a match factory are considered extremely hazardous, hence every care and precaution is used. The idea of danger is ever present . The idea of playing safe is always present in the minds of all. A cotton mill is a seemingly comparatively safe place to work, although there are potential but unlikely possibilities.

Carelessness, indifference, familiarity with hazards, etc., cause the group to lose entirely the danger point of view and become constantly in danger.

To be safe, does not mean that one must approach his job with fear in his mind. Fear is a destructive factor and sets up abnormal mental states. It does mean, however, that the worker must realize that he must be on the alert and use his judgment and common sense. He must be alive to the possible hazards and the evil consequences arising therefrom.

It is entirely possible for a mill with a high physical rating to have a much lower rate than a mill with a low physical rating. This fact is made possible by the effectiveness of the safety organization.

Many mill men think that when all of the safety devices and mechanisms have been secured and properly arranged that all danger has been removed. Machines may be made fool-proof, but people, so far, have not been made fool-proof. Again, a machine acts mechanically. It always acts the same way, or approximately so. People have moods and dispositions as variable as the weather and sometimes as uncertain. A machine set a certain way, can be checked and its action foretold. No human being in the world can be checked and his actions foretold with any degree of accuracy. If we could, we would be able to solve the safety problem. But as long as there are people there will be problems of safety.

The safety organization must be constant students of mankind, their reactions, their problems, their moods, their dispositions and dozens of other characteristics in order that they may properly safeguard them.

People have a right to work and they have a right to

work in groups and under conditions which are as safe as possible.

Safety organizations must be able to properly evaluate hazards and their relations to the people who work there. Often the seemingly insignificant thing is the most serious. A bobbin on the floor, a plank sticking up a little above another, a worn step, a ragged belt, a worn shaft, innocent and casual playing or joking. All of these are incidental and not enough to demand attention until a serious accident occurs and then some action is taken.

The standard safety rules indicate that at least once or twice each year the entire group of workers must be assembled and they must be lectured to, or at, by some one. The organization generally gets the Safety Engineer of the Insurance Company to do this and he comes as a part of his duty.

This safety engineer does not know the local sentiment or philosophy of the workers; he does not know how they think or why they think as they do, hence he is handicapped as he makes his effort.

The average worker has no interest in this outside and unknown man who is butting into their business and interrupting their work, so they are handicapped in their reception of his advice and suggestions.

The safest bet in putting on a mass safety idea is for the local people to do it. If it can't be done in large groups it must be done in small groups. It must not be done in form. It must be done in fact. The people must get the idea.

Again, in the Safety Organizations, it is required that safety signs and warning, precautionary measures must be posted conspicuously.

Most of the insurance companies supply these posters and they are good, but they don't get over. The average worker will read one and at the bottom it will be signed "Kuropatkin Casualty Company, Columbia, Mo." He will then wonder what that fellow has got to do with his work, and if he has anything to do with it—he is not here, so why pay any attention to it.

If the same poster were signed by the superintendent or overseer or president of the safety committee, the whole thing becomes vital and appealing at once.

These perhaps are details that should not enter here, but I desire to impress upon the mill managers that a safety committee is not an ornament or mechanical device. It is a reality and should function in a big way.

Another function of a safety committee as I see it, is to devise a few definite, fair and reasonable rules for safety and see that they are rigidly obeyed. I have seen some posted that were so smeared with dirt and age that they were difficult to read.

Safety is a local problem. It will not solve itself. It is a problem that requires as much brain power as manufacturing. It is everybody's business, but everybody must be governed by somebody and I suggest that the safety program should be directed by a real, intelligent and dependable safety committee.

CURRENT TOPICS

Politics and Farm Relief.

McNary-Haugenism still dominates both the legislative and political phases of the farm relief problem, which in several ways is a business and industrial problem. Somewhat improved conditions in agriculture have not apparently relieved the pressure behind the rather radical program of relief envisaged in what is known as the McNary-Haugen bill. This bill was passed by the last Congress and failed of enactment because of a Presidential veto. Its most controversial feature is the so-called "equalization fee" arrangement, by which it is proposed that agriculture raise itself by its own bootstraps, as it were, to a better economic situation. The proposal is a sort of inverse type of valorization. Farm surpluses would be controlled with the view of holding them or dumping them abroad in ways that would keep prices for farm products at desired levels in this country. The losses would be made up by "equalization fees"—in truth taxes—on all such farm products that are transported, marketed or "processed" during the period of control. Operations would be directed by a Federal Farm Board with $400,000,000 of Government funds with which to finance them.

Representative Haugen has reintroduced his bill, with the "equalization fee" proposed in full-panoplied form. Senator McNary has modified that feature of his bill. But the farm leaders and organizations which hitherto have supported the plan say that they will accept nothing which does not embody the "equalization fee" arrangement in the fullest form. They have little hope of procuring it at this time. Congress may adopt it again but it is not apt to get by the White House so long as President Coolidge is in office.

But it might become an important issue in the pending national political campaign. Outstanding McNary-Haugenites in the Republican party are for former Governor Lowden of Illinois for their party's nomination for President. Lowden has not gone on record positively for the "equalization fee" principle but is evidently rather in sympathy with it. Failure to solve the farm problem may help Lowden; hence the politics of the situation weighs against the probability of a compromise relief scheme of importance being adopted.

The signs at present are against Lowden, no matter what happens with reference to farm relief. They are not so strongly against Vice President Dawes, who is credited with having paved the way for the passage of the McNary-Haugen bill through the Senate last year. Lowden's following is expected ultimately to go to Dawes for the Republican nomination. Though most of them are for the McNary-Haugen plan of farm relief, the radicals, i.e., the Norris-Borah group, are opposed to Lowden and presumably Dawes.

What if the McNary-Haugenites miss out entirely in the Republican convention? This probably would eliminate the farm question, as a paramount issue, in the Pres-

idential campaign. The Democrats are not likely to adopt McNary-Haugenism as a platform principle, and mid-Western farmers hardly would go over decisively to a third party on that issue alone. Farmers in the Middle West, where the McNary-Haugen plan has become a sort of dogma to which large groups of organized farmers are bound, are by tradition protectionists. The McNary-Haugen scheme is based on the principle—being a curious elongation of it—of high tariff protection. If it provides the only way to relieve the farm situation within a policy of high tariff protection, then low tariffs, or adoption of the free trade principle, is its seeming alternative.

This may be the most important phase of the subject's relationship to politics as affecting business and maybe the country as a whole. Ultimate scuttling of the "equalization fee" proposal may cause the McNary-Haugenites, or the sincere and impassioned ones, to demand lower tariffs. The purpose of the "equalization fee" is the raising of farm product prices without lowering other prices. The same end might be achieved by lowering other prices via bigger free lists and lower tariffs on imported goods that are taxed for protective reasons.

It all depends on really how strong the farm population, particularly that in the Middle West, is for the McNary-Haugen scheme. This has never been clearly determined. But by this time next year it probably will be.

Foreign Trade Values.

"American foreign trade, exports and imports combined, represented 11 per cent of the world's trade in 1913 and 16 per cent at the present time," says Dr. Julius Klein of the U. S. Bureau of Foreign and Domestic Commerce. The ratios would seem to imply a huge actual as well as relative increase. So would the actual figures in terms of dollar values. But figures can be misleading.

In truth, as Dr. Klein points out elsewhere, this country's foreign trade has increased since 1913 only at about the rate that it increased during the same period of time prior to the war. There were big leaps forward during the war, and it is probable that accurate analysis would show that the rate of increase since the war has been less than that during a similar period prior to 1913.

What, in broad terms, has happened is that the United States has retained its position in world trade, despite the failure of that trade to increase on the whole. For several years following 1920 the total of world trade was less than during a like period prior to the war. For the last two years it has been of about the same volume as in immediately pre-war times. It is now probably a little larger, with tendencies toward normal and perhaps accelerated growth. Our aggregate gain is traceable to European recessions caused by the war. Europe's foreign trade has been less in about the same degree that ours has been larger than in pre-war times.

Europe is overcoming those recessions. In a few years the Continent will be doing a larger foreign trade than prior to the war. How this will affect America's trade no one knows. Europe always has been this country's best customer, buying now nearly half of our exports. A larger proportion used to go there. Raw materials figured bigger proportionately in our exports then than now. Finished manufactures increased from 31 per cent in 1914 to 41 per cent of all American exports during the last fiscal year.

Farm products make up the bigger part of American raw materials sent abroad. It is becoming increasingly evident that, aside from cotton, the exporting of American farm products in raw form is fixedly on the decline. Increasing growth of exports depends on the expanding of markets abroad for finished and semi-finished manufactures.

As the relative weights of our export business in raw materials decline that of raw materials in our imports increase. And the margin between imports and exports is narrowing, with rather convincing indications that we are headed towards a time when we will bring in more than we send out. This time may not be very far away.

Yet exports no doubt will increase but probably not so rapidly as the total of our foreign trade, which now, the Department of Commerce estimates, constitutes 10 to 12 per cent of all the business done by the country. Fifty per cent and more of the business of some nations is in the foreign field. But we now do a greater volume of foreign business than is done by any other people.

Government Can't Be Something Else.

Away back in the early days of telegraphy, the United States Government granted the Western Union Telegraph Company certain privileges in return for a grant by the company of lower rates for Federal Government than for private business handled by the company. The arrangement was to operate in perpetuity.

During the war the Government set up the Emergency Fleet Corporation as an agency for operating Government-owned merchant ships. The corporation was set up so that it might make contracts and sue and be sued like other private corporations. That is, it became a purely business enterprise, though owned and supported by the Government.

The Western Union held that Fleet Corporation business did not come within its arrangement as to rates with the Government and that to charge it Government rates only was unfair to private establishments operating in competition with the corporation.

The issue went to the United States Supreme Court which holds that the arrangement applies to Fleet Corporation business. The court so holds, substantially, on the ground that, though it goes through the forms of putting an operation in the class of like operations by private agencies, the Government is government in that as in other activities. In support of this the court points to the immense losses, taken care of by the Treasury, on Fleet Corporation operations.

The decision supplies an obvious point of argument for those who lightly favor government ownership. For isn't a saving like that on telegrams an advantage which private owners of business cannot command?

But the decision also supports the contention put forth on the other side that nobody can compete with the Government in business, not because government can carry on business enterprises more economically, but because the Government in business continues to be the Government in all particulars. It simply cannot divest itself of attributes which make it all powerful and exclusive in whatever sphere it operates.

Pegging the Dollar.

Can the dollar be stabilized, its buying power controlled? An increasing number of economists are holding that it can be. Some go so far as to say that a fair measure of dollar stabilization, by artful control, has been maintained in recent years. Others declare that it is possible to so regulate the dollar as to maintain a reasonably even level of general prices from month to month and year to year, and thus prevent those subtle shiftings of wealth and more disturbing troubles caused by inflation or deflation.

This last seemed to be the opinion of most of the economists present at the recent annual meeting, late in December, of the Stable Money Association. The purpose of the organization is to promote the stabilization of the dollar. It fosters no schemes like that of fiat money. In fact, the organization backs no particular plan. One of its most active members is Dr. Irving Fisher of Yale University who is the author of the novel proposal that stabilization be achieved by changing the gold content of the dollar conformably with price changes. If general prices should go up, say, 10 per cent, he would reduce the amount of gold represented by a paper dollar in equal extent, or vice versa in case of a decline in general prices. This, he claims, would maintain an almost even level of general prices.

There is before Congress a bill proposing adoption of the Fisher plan. But nothing will come of the bill for the present, as its supporters say much else must be done before such a radical change can or should be made.

Meantime, most of the stabilization advocates are concentrating their support on what is known as the Strong bill. "All the powers of the Federal Reserve System shall be used for promoting stability in prices," is the essence of the bill.

Its supporters say that the purpose of the bill is only to validate what the Federal Reserve Board and the Federal Reserve Banks have been attempting, without clear warrant of law but in entirely legal ways, to do. And some students of the question say the attempts have been measurably successful during the last two or three years. These claim that the Federal Reserve Board, with the aid—which in one recent case was forced from one of them—of the Federal Reserve Banks, has guided, if it has not substantially controlled, the general price level by the exercise of two powers. One is the power to raise or lower discount rates, which enables the board, say these students, to control the price of credit. The other is the right to buy and sell securities in the open market, which, it is claimed, enables the board to control the volume of credit. This phase of the subject is discussed in detail by Professor John R. Commons of the University of Wisconsin in the January and February numbers of the *North American Review*.

Dr. Commons shows, at least convincingly to himself and persuasively to others, how the Federal Reserve authorities in the early Fall of 1927 brought about a rise in the general price level which had been falling, and by doing so gave stimulation to business in some quarters both abroad and at home.

Federal Reserve authorities who have expressed themselves about it do not seem to be very enthusiastic for the Strong bill, or for the contention of those economists who hold that the stabilization of the dollar can be assured by purely contrived measures. "We should not deceive ourselves as to the extent of the control that the Federal Reserve System can exercise," says W. P. G. Harding, former governor of the system and now governor of the Boston Federal Reserve Bank. "Even were it possible to place the control of the money market in the hands of a small official body, it would not be wise to do so. Such a responsibility is too great to place in the hands of any organization."

It is not contended by the stable money economists that absolute control can be maintained through the Federal Reserve System. They say that extreme situations, like a severe shortage or great increase in the supply of gold, would annul any effort to control the volume and price of credit and thereby keep the price level to an even keel. But they do contend that under usual conditions, the general price level may be kept within reasonable bounds of fluctuation by regulating the volume and the price of credit, as, they further claim, the Federal Reserve authorities have been doing. Beyond that, they say, some revolutionary change in the basis of money must be made if extreme conditions are dealt with successfully. Proposed control applies, of course, to the general price level only; all admit that individual prices should not be meddled with. But opponents of schemes of control say that a great many people will fail to make distinction between general and individual prices, which is a statement of one of the difficult psychological factors involved with the problem.

It is, however, a most interesting and important problem. Towards its amelioration, if not solution, much headway appears to have been made. This has been expedited by the enormous overturns, disastrous in many ways, caused by super-inflation during the war period and subsequently extreme deflation. Data are now available as never before for studying the problem. Extended hearings, apropos of the Strong bill, will be held again probably at this session of Congress.

No Politics the Best Politics.

"It is surprising to me," William E. Borah, the "lone wolf" of national politics once said, "why more politicians don't recognize the fact that no politics usually is the best politics."

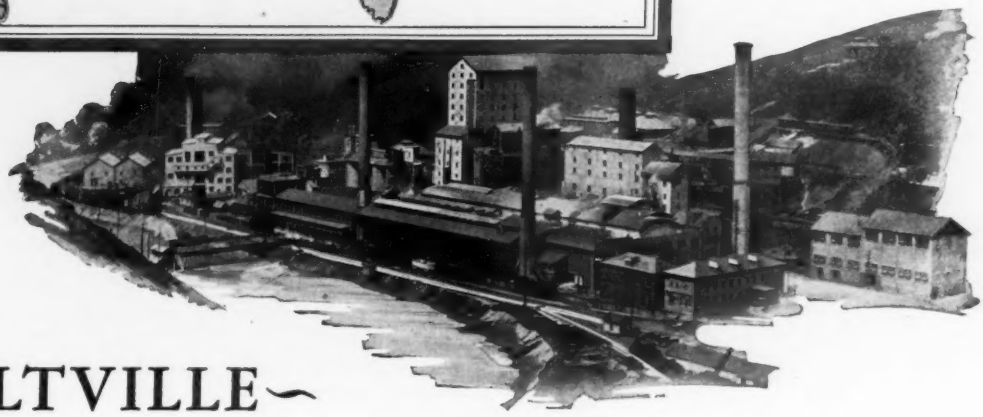
A good many apparently recognize the fact, for the present at least. It seems that for once that there will be a pre-convention Presidential campaign without a series of headquarters, with press agents and managers belaboring each other, and almost without proclaimed candidates.

There are avowed candidates for the nominations for President by the big parties but scarcely any of them is taken seriously by anyone except himself . The men who are taken seriously as prospective nominees are studiously keeping away from the usual methods, or ones of the ballyhoo type, of political pursuing. Not one so far has a recognized "campaign manager."

There will be playing of politics during the pre-convention period but this may not take precedence over the evolutionary process by which the "best man" is most often selected by either of the big parties.

The conventions and the post-convention campaign always supply a sufficiency of mere politics during a Presidential year.

Saltville, Virginia, plant of The Mathieson Alkali Works (Inc.)—located at one of the most extensive deposits of salt in the South. Saltville is served by the Norfolk and Western Railway, southward to Bristol, (Va.—Tenn.), Winston-Salem and Durham, eastward to Norfolk, northward to Hagerstown, and westward to Cincinnati and Columbus, with through connections to all points via the Southern Railway, Atlantic Coast Line, Baltimore & Ohio, Pennsylvania, Chesapeake & Ohio, Louisville & Nashville, Seaboard Air Line and their connections.



SALTVILLE—

a Keystone in the South's Rapidly Growing Industrial Structure

LOCATED in the heart of one of the most extensive deposits of salt in the South, the Saltville, Virginia, plant of The Mathieson Alkali Works, has become a valuable asset to the chemical consuming industries of the South and Southwest as well as of many sections of the North and Middle West.

Southern industry, favored with an ample and readily accessible source of heavy chemicals, has been able to trim manufacturing costs in every department that requires the use of alkali. By reducing costs, while at the same time maintaining high quality, Southern alkali users have laid the cornerstone of industrial achievement and made their names and trade marks synonymous with high quality, uniformity and outstanding value.

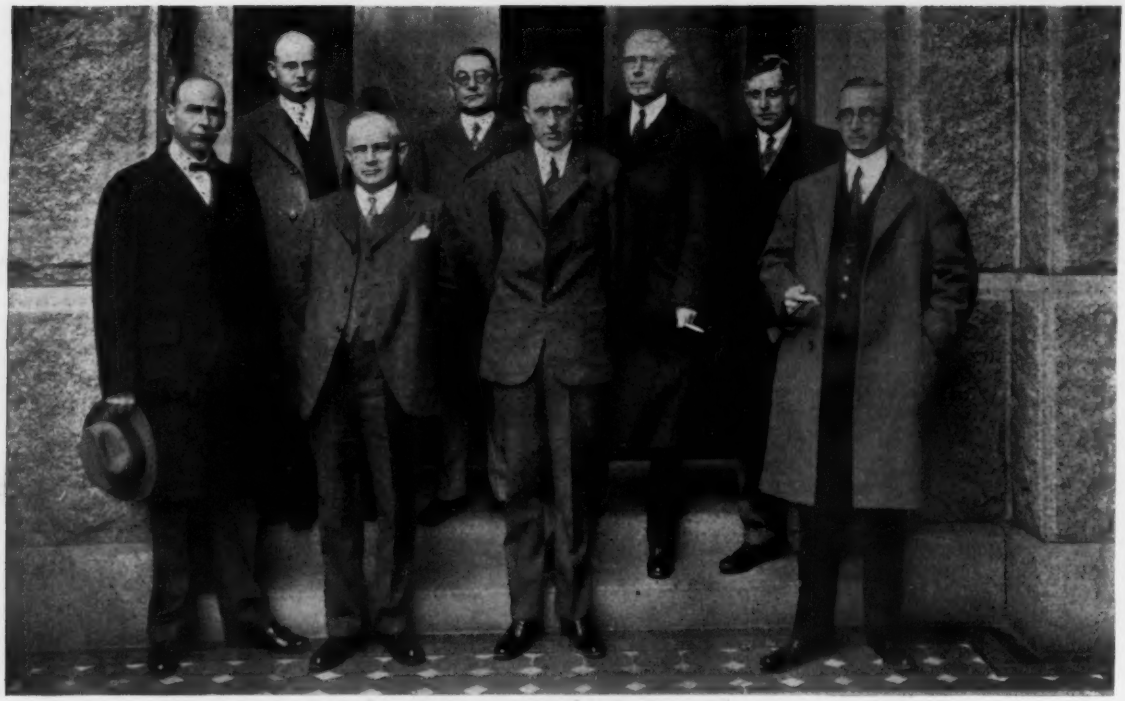
To grow industrially, a community must have basically sound resources of such important raw materials as alkali and acid; in fact, industrial growth can be measured by alkali production. Saltville, then, may well be termed a keystone in the growing structure of Southern industry.

MATHIESON Industrial Chemicals

CAUSTIC SODA
LIQUID CHLORINE
BICARBONATE OF SODA
MODIFIED VIRGINIA SODA
SODA ASH
BLEACHING POWDER
ANHYDROUS AMMONIA
AQUA AMMONIA

The MATHIESON ALKALI WORKS (Inc.)
250 PARK AVENUE NEW YORK CITY

PHILADELPHIA . CHICAGO . PROVIDENCE . CHARLOTTE . CINCINNATI | DEAL DIRECT WITH THE MANUFACTURER | Works: NIAGARA FALLS, N.Y. SALTVILLE, VA. NEWARK, N.Y.



TEXAS BIDS FOR EASTERN MILLS.

Governor Dan Moody, of Texas, has appointed a Texas Industrial Committee which will stress Texas' bid for textile industries. The members shown in this photograph, reading from left to right, are W. E. Austin, Fort Worth; Carl Pool, Sherman, vice chairman; G. M. Knebel, San Antonio, secretary; Albert Clifton, Waco; Governor Moody; R. M. Kelly, Longview; E. H. Kifer, San Antonio; and John W. Carpenter, chairman, president of Texas Power & Light Company. J. Perry Burrus, Dallas; J. A. Kemp, Wichita Falls, and W. L. Clayton, Houston, other members are not shown in the photograph. Mr. Carpenter proposes a special train carrying textile mill executives from Boston and New York to Texas. The committee's campaign will emphasize labor economies, raw material supply, transportation and power, climate, market, etc., etc.

What the Southern Mills are Doing.

The outstanding event of a general nature among the southern mills during the past month was their participation in further plans of curtailment of production for the purpose of regulating production in accordance with demand.

During the first part of January, two groups of the Cotton-Textile Institute, Inc., met in North Carolina, and were addressed by President Walker D. Hines, who discussed general conditions in the industry. One of these meetings was held by the Carded Yarn Group in Charlotte, N. C., on January 6th, and the other was of the Chambray Group, in Greensboro, N. C., on the following day. After these meetings adjourned, each of the mill representatives attending the meeting indicated his purpose to make substantial reductions in production; in the case of the yarn mills, operations are suspended from noon on Fridays until the following Monday mornings—the reduction in the production of chambrays and cheviots will approximate 27 per cent.

Giving definiteness to rumors which have been current for several months, the Alabama Power Company, Birmingham, Ala., has organized the Alabama Mills Company, for the purpose of erecting and operating ten mills in as many different Alabama towns, work of construction to begin immediately. Boaz, Albertville, Haleyville, and Wetumpka, Ala., are among the towns in which units of 10,000 spindles and complementary looms will be located. It is understood that Robert & Company, Atlanta, Ga., have been engaged as engineers for the work. The capital of the company is $7,200,000. It is understood that part of the machinery to equip the mills will be removed from the Everett Mills property at Lawrence, Mass.

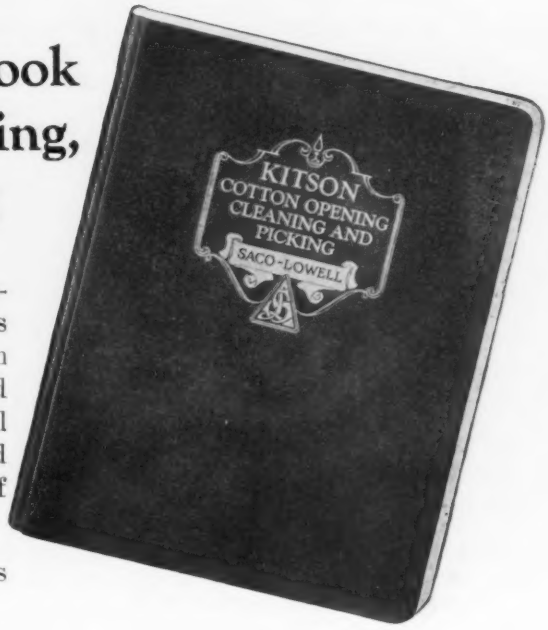
The Mignon plant of Avondale Mills, Sylacauga, Ala., will install 128 looms in addition to the present spindleage for the manufacture of cloth.

The Elizabeth Bartlett Mills, Acworth, Ga., have been formally organized. At a meeting of the stockholders, the following officers were elected: A. T. Wilde, president and treasurer; L. M. Awtrey, vice-president; and J. E. Carnes, secretary. The directors include the officers and A. J. Durham and G. W .MacMillan. The capital stock is $100,000 common and $15,000 preferred. A new weave building, 40x102 feet, has been erected on the Cowan Moore property to house twenty-four 90-inch Stafford looms with Halton Jacquard heads. Other buildings on the property will be used for slashing, warping and dyeing. The mill is to manufacture high grade draperies and tapestries. The product will be sold by the Stockton Commission Company. Robert & Company, of Atlanta, are the engineers. The Norwood-Griffin Company are the contractors. Production will begin about the first of March.

Habersham Mills, Habersham, Ga., is building an addition in which 10,000 additional spindles for yarn manufacturers will be installed.

New for Cotton Mill Executives

A Complete Reference Book on Cotton Opening, Cleaning, Blending and Picking



PROBLEMS which opening and picking departments face every day are analyzed in this book. Present-day practices and theories on the preparatory processing of cotton are discussed and commented upon. Records of authentic mill tests are given, showing the savings and increased efficiency obtained from various combinations of equipment.

Layouts show the operating systems of mills running under varied conditions.

Detailed information is given on the construction of opening, cleaning, and picking equipment; also the conclusions, based on 75 years of practical experience, which have led to the development of the present designs of "Kitson" machinery.

You may find in this book the solution of your troublesome problems, or a suggestion that will enable you to operate your opening and picking departments more efficiently. But even if your present equipment is giving you satisfactory results, you will be interested in reading about these new progressive developments that are helping mills lower their processing costs.

SACO-LOWELL

Largest Manufacturers of Textile Machinery in America

147 MILK STREET, BOSTON

CHARLOTTE, N. C. GREENVILLE, S. C. ATLANTA, GA.

SEND THIS COUPON TODAY FOR YOUR COPY

SACO-LOWELL SHOPS,
147 Milk St., Boston, Mass.

Please send me your new book on Cotton Opening, Cleaning, and Picking Equipment.

Name .....

Title .....

Mill .....

Street .....

City .....

State .....
C.

Lavonia Cotton Manufacturing Company, Lavonia, Ga., is electrifying the plant. J. E. Sirrine & Company, Greenville, S. C., are the engineers.

The Dalla Noval Yarn Mills, Dallas, Ga., have adopted a cooperative group insurance program, through an arrangement with the Metropolitan Life Insurance Company, in which the employees participate. The employer pays a substantial portion of the premiums.

J. E. Sirrine & Company, Greenville, S. C., have been retained as engineers for the Industrial Rayon Corporation, of Cleveland, Ohio. The company has under consideration the selection of a site in the South for the erection of a rayon manufacturing plant.

According to report, the Slater Manufacturing Company, which is starting a plant at Marietta, near Greenville, S. C., will double the capacity by the end of the year.

An addition to be used as a rayon dyeing plant is being erected by the Southern Franklin Process Company, Greenville, S. C.

Clinton Cotton Mills, Clinton, S. C., will install 11,000 new spindles, which will make a total of 81,000 at this plant.

It is reported that S. M. Edelstein & Co., of Union, S. C., industrial engineers, have secured for Abbeville, S. C., a large drapery plant which will be removed from an eastern location.

A deal involving the controlling interest in the Highland Cordage Co., the A. A. Shuford Mill Co., and the Ivey Mills Co., of Hickory, N. C., and the Granite Cordage Co., and the Granite Falls Mfg. Co., Granite Falls, N. C., has been consummated between C. H. Geitner and Alex A. Shuford, principal officers in these companies. Mr. Geitner has sold to Mr. Shuford his interests in all of these plants with the exception of the Ivey Mills Co. In turn, he has secured the interest of Mr. Shuford in that company. Mr. Geitner becomes president and treasurer of the Ivey Mills Co., and will devote his time to that mill, and Mr. Shuford will be president and treasurer of the other mills involved in the transaction. For years Mr. Geitner has been president of all the mills in this group, with Mr. Shuford secretary and treasurer.

Chatham Manufacturing Company, Elkin, N. C., will soon complete the 112x163 foot, three-story addition to the plant, which will increase the production by about one-third.

Carolina Cotton & Woolen Mills Company, Spray, N. C., will install 200 new looms to make wide sheetings in the Nantucket Mill. This equipment displaces the 200 gingham looms removed from the plant in 1927, when 52 wide looms for the production of automobile fabrics were installed. A warp tying machine and two new slashers, with complementary warpers will be installed.

Hanover Mills, Inc., Gastonia, N. C., have been chartered. The incorporators are L. S. Rankin, R. P. Rankin and G. B. Mason. The charter permits the manufacture, purchase and sale of yarns.

Proximity Mfg. Co., Greensboro, N. C., has let contract for the erection of the new weave shed, to be 268x144 feet, one story. It will connect with the present weave shed of the Proximity plant by a passageway and will house 500 looms. J. E. Sirrine & Company, Greenville, S. C., are the engineers.

The Franklin Rayon Mills will locate at Franklin, Tenn., for the manufacture of cloth for dresses and underwear. The incorporators are Harry Alman and Phillip Sears.

It is understood that the Chamber of Commerce, Charleston, Tenn., is interested in the establishment of a silk weaving plant at that place.

The Dallas Cotton Mills, Dallas, Texas, have placed contract with the Universal Winding Company and the Saco-Lowell Shops for the Universal system of high speed winding and warping, to replace present equipment of spoolers and slow speed warpers.

The El Paso Cotton Mills Company, El Paso, Texas, has recently built a new cloth room and office building, and is completing the installation of 3,000 additional spindles and 100 additional looms.

New England Mill Situation.

Cotton mills in New England are curtailing production very generally, it now being exceptional to find any plant occupied to capacity. There are many mills running full time but they have either ceased to operate departments at night or have allowed some machinery to stand idle when orders have expired. In Fall River it is stated that print cloth mills are running not in excess of 50 per cent capacity.

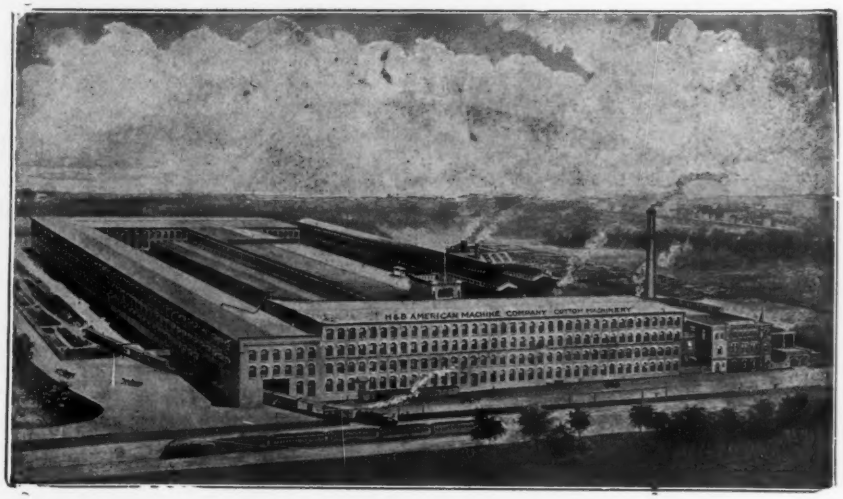
At a meeting of the Fine Cotton Goods Exchange held on January 13th it was voted to reduce the production 20 per cent and continue at the reduced level until October 1st. This action was taken by mills not in the Exchange as well as those in the North and South now allied with it. The decision will affect between 125,000 and 150,000 looms. A few very large mills have persistently declined to ally themselves in any cooperative movement but when it was proposed to them to join with others in limiting production more nearly in accord with demand their managers were quite willing to subscribe to the agreement.

The only instance of increasing production was that in New Bedford where three large tire fabric plants resumed operations. They will not be running to capacity for some weeks as yet and will give employment to about 3,000 hands when manned in full. These mills are owned by the Goodyear, Fisk, and Firestone tire manufacturing interests. Before employing new operatives the managers of the plants decided to hire only those workers who were American citizens or who had applied for naturalization. This policy, most unusual in New England, bids fair to be widely adopted in the future. It is understood to be the rule with most of the large automobile concerns.

A few mills in New Bedford are engaged to about 90 per cent capacity and are running chiefly on fancy goods and specialties for which orders were taken some time ago. Prices on many of the plain fine combed goods fell away during the past month and it led several manufacturers to decline business on contract even with the most desirable customers.

The wage reduction that began a month or more ago and spread through all of the northern New England mills is continuing to spread in the southern part of the section. The employees of the American Printing Company including the five cotton mills accepted a reduction of 10 per cent in their wages, effective January 16th. This action was forced by wage reductions in some of the Pacific Mills properties in the northern part of New England. The wages of operatives in the Stevens Manufacturing Com-

COTTON MACHINERY



WE BUILD

EXHAUST OPENERS—HOPPER BALE OPENERS—CRIGHTON OPENERS
BUCKLEY OPENERS—SELF FEEDING OPENERS

FEEDERS—COTTON CONVEYING SYSTEMS—ROVING WASTE OPENERS
INTERMEDIATE and FINISHER LAPPERS

REVOLVING FLAT CARDS—DRAWING FRAMES (Mechanical or Electrical Stop Motion)
SLUBBING—INTERMEDIATE and ROVING FRAMES
SPINNING FRAMES and TWISTERS

(Band or Tape Driven)

SPINDLES—FLYERS—FLUTED ROLLS

Descriptive Bulletins Sent on Request.

H & B AMERICAN MACHINE CO.

Pawtucket, R. I.

Southern Office, 814-816 Atlanta Trust Co. Bldg., Atlanta, Ga.

pany at Fall River were reduced 10 per cent following a reduction of a similar amount in the Bates Mill of Lewiston, Maine, where bedspreads similar to those made in the Stevens are produced.

Wages in the mills at Palmer, Mass., were reduced 10 per cent and other isolated mills like them are either posting notices or preparing to give notice of reductions. While there have been meetings of labor unions in various centers to protest against any change in wage schedules there has been no serious resistance. In Connecticut a reduction of 10 per cent in wages was put into effect in the Cheney Silk Mills but up to the present time mills throughout Rhode Island, Connecticut, and the mills generally in Fall River and New Bedford have given no intimation of a change.

Financial reports show that earnings have been steadily declining and a very great part of the curtailment of production that has been seen has been of a voluntary character and oftentimes ordered by individual managers regardless of the action of competitors in the same field.

The tendency that has been reported for some time past to restrict the excessive municipal expenditures that have led to extraordinarily heavy taxation upon mills continues as a prominent feature throughout New England. In Fall River the city granted rebates of taxation to the Osborn and Granite Mills to encourage stockholders to reorganize the properties financially and to endeavor to restore them as going industries in the city. In New Bedford where manufacturers are protesting against excessive valuations and tax bills efforts are being made to compromise and to lift some of the burden from the corporations.

The curtailment of production that has been going on in the finishing industries for some time still continues although since the turn of the year there has been some little revival in the demand for printing. During the past two months there has been an unusual rush upon engravers who have been at work preparing new designs for printed goods to be offered in supplementary lines for late Spring and early Summer delivery into distributing channels.

Manufacturers who have been using rayon very freely in the past year have not been keen on making longer commitments for yarn deliveries into the early Spring months. One explanation is that since the decline in Celanese prices last Fall there has been less confidence in the stability of chemical yarn fibers than there was up to that time. Another reason is that in the markets many rayon products have been forced for sale at low prices, thus creating doubt as to their future stability. This has been more noticeable in the lower grades than the higher but to some extent some of the higher rayon mixtures have been affected adversely.

The manufacturers who have been using rayon very largely have found that the risks growing out of competition are quite as great, if not more so, than those common in the cotton goods trade. Many lines have been over produced. The tendency of rayon producers to encourage the larger sale of all rayon goods in distinction from rayon mixtures has also caused some manufacturers to question whether they may not be at the mercy of rayon producers if they divert all of their machinery away from cottons.

In the bedspread divisions rayon goods have come to dominate the merchandising situation. There are some bedspread plants that were engaged almost wholly on cotton goods less than three years ago are now turning out less than 20 per cent in all-cotton products. The public demand has been for the lustrous and highly colored materials. The same thing is true of many of the drapery lines, especially those of a damask character.

Questions of distribution and merchandising continue to be discussed widely among cotton manufacturers in New England. Much attention is being given to the efforts being made by the Pacific, Nashua, and Pepperell Mills in trying out different forms of agency distribution to get their trade-marked lines moving more actively in retail houses. The expensive advertising campaigns and the high-power sales agency methods are being discussed from every angle, but notably from the one of whether mills can incur the additional expenses required and insure any broader or steadier distribution than is obtained on other lines where other methods are being employed.

The work being done in New York to secure closer cooperation between converters, wholesalers, and mill selling agents is being watched closely and studied carefully. A short time ago Converse & Co. began to offer some of the products of B. B. & R. Knight Mills in printed and dyed form, the work being done in re-equipped plants of their own. This will give them a more direct control of their fine count product.

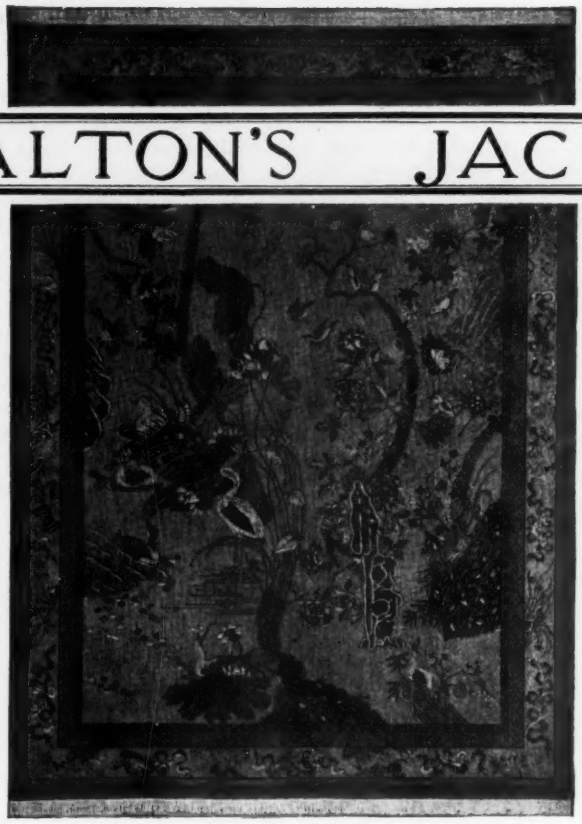
Owing to the great expansion of the bleaching and finishing industry in the South the competition in the more staple finished goods has become most extraordinary and almost of a killing character. To lessen the effect of the competition between the southern plants efforts are now being made to bring about cooperative understandings between them. In this work the services of the New England owners of southern plants are being enlisted. It is felt even by some of the investors in the southern field that something must be done to avoid a kind of competition that is certain to reflect adversely on other lines of finishing than those likely to be done in the near future in the new southern plants.

Up to the end of the year the printers were very fully employed. But business slacked off considerably the last month of the year and it is now only beginning to revive again in lines where additional new deliveries are sought or where new offerings in designs and coloring are being made.

The fashionable vogue of printed dress linens has reflected back into the cotton goods lines to an extent that many coarse yarn linen finish foundation fabrics are now being printed for Spring and Summer outerwear. It is not believed that this business will assume any very large volume as the greatest yardage of goods being cut up is of sheer fine yarn construction. Rather more than the usual proportions of fine count print cloths are being sold.

The new cotton blanket season for Fall 1928 has started in satisfactorily to the largest of the New England producers. The business is not near as large as a year ago but the tendency to call for the better qualities in fancy weaves is still very marked. The novelties are selling better than the staples. The business done on wide cotton flannels for the cutting trades has not been as large as last year as the cutters have fought the price advances by declining to make commitments ahead. Some price concessions are stated to have been made within a short time and some apprehension is now expressed lest a weaker cotton market may induce manufacturers of narrow flannels to refrain from asking the higher basis named when the wider

HALTON'S JACQUARDS



"By Karagheusian with a Halton Jacquard"

These words are charged with significance in the world of rugs as the "House of Karagheusian" is one of the oldest and largest producers of Persian and Chinese Rugs in the world.

Halton Jacquards play a most important part in the manufacture of these rugs as only with a Halton can Karagheusian attain the charm and glamour of the Oriental handwoven rug.

Picture shows the Chinese Renaissance Rug, the first Wilton to have been woven without a repetition of the design. This design was copied in Europe on a hand-woven rug and exhibited throughout the world.

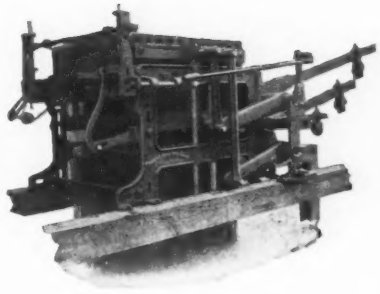
Halton Jacquards are used where the finest rugs are made.

We do harness building of every description.

We are prepared to furnish at short notice comber-boards, lingoes, mails, etc. Ingrain and Brussel parts.

We do replacing and repairing of Jacquard machines of other makes as well as our own.

Immediate and expert attention our guarantee.



THOMAS HALTON'S SONS

Mascher St. below Oxford
Philadelphia

Selling Agent
H. A. FORBES
P. O. Box 1663, Paterson, N. J.
Telephone Lambert 8592-W

Southern Representative
FRED H. WHITE
304-8 Independence Bldg.
Charlotte, N. C.

"USE A HALTON JACQUARD AND YOU USE THE BEST"

goods were first shown.

The extent of the agreement arrived at through the efforts of the Cotton Textile Institute and the selling agents of New York has been surprising New England manufacturers greatly. While the logic of the situation demanded such action if the figures of the Institute were to have any real meaning it was not thought that the cooperative spirit had become so well established as to warrant hopes of the wide curtailment that has been seen in the South. It is because of this curtailment rather more than any other single influence that most New England manufacturers are convinced that 1928 may be turned into a year of real profit to the mills. It is certain that New England manufacturers are growing more confident each week of being able to restore more satisfactory conditions in the industry in their section.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, January 14th, 1928.

During the first half of the period under review the market gradually worked somewhat higher, but with the turn of the new year, values assumed a sagging tendency again under the depressing influences of the absence of any demand of consequence for spots in the South, increasing domestic mill curtailment, the continuance of light exports from the United States, large sales of fertilizer tags and reiteration by the government to the effect that the recent severe cold weather throughout the cotton belt probably destroyed many boll weevils. As a result prices are back to about where they were one month ago.

The movement to market continues very light, since August 1st. 10,325,000 bales versus 13,667,000 to even date last season, and while exports from the United States thus far this season total only 4,204,000 bales against 5,992,000 to corresponding date last season, takings by spinners of the world to date have been large enough—8,213,000 bales compared with 8,910,000 to even date last season, to cause a rapid decrease in the world's visible supply of American cotton, which is now 5,375,000 bales against 6,833,000 last year.

WORLD SPINNERS TAKINGS OF AMERICAN COTTON.

	Bales— This season	Last season
North and Canada	932,000	1,497,000
South	3,192,000	3,270,000
Foreign spinners	4,089,000	4,143,000
World	8,213,000	8,910,000

DISTRIBUTION OF WORLD'S VISIBLE SUPPLY AND WORLD'S AVAILABLE, EXCLUSIVE OF MILL STOCKS.

American cotton—	Bales— This year	Last year
In the United States	3,266,000	4,037,000
In Europe and afloat for Europe	2,109,000	2,796,000
World's visible, January 13th	5,375,000	6,833,000
Unmarketed, estimated	4,466,000	6,727,000
World's available, about	9,841,000	13,560,000

CENSUS REPORT

United States—	Bales— This season	Last season
Consumption, December, inc. linters	595,000	656,000
For 5 months, Aug. to Dec. inclusive	3,382,000	3,167,000
Mill stocks, December 31st	1,707,000	1,764,000
Stock in public storage, Dec. 31st	5,656,000	6,548,000
Stock in mills and public stg., Dec. 31	7,363,000	8,312,000
Active spindles during December	31,715,000	32,490,000

If the demand and exports were as good as this time last season the market would be in a very strong position, but there is an absence of an urgent demand, and exports promise to continue light.

December was the first month of this season to show a smaller consumption than last season, and as consumption continued large during the remainder of last season, and as mill curtailment has set in already, it is probable that domestic consumption, month by month, will be smaller during the remainder of this season than it was after this time last season.

In view of the limited supply of raw cotton in the South, however, domestic consumption, larger to date than last season, is generally expected to figure smaller than after this date last season.

The high basis in the interior, representing a big premium on futures, which makes raw cotton costly, has done much to restrict business in spots; buyers refusing to pay the high basis, and holders refuse to make concessions, hence the deadlock.

As to the outlook for the next crop, preparations are reported as generally backward owing to the uncertainty of the future, but there is talk of the probability of some increase in the acreage since prices are nearly six cents higher than one year ago, while sales of fertilizer tags are reported larger than last year.

The trade is very much concerned as regards the boll weevil situation in the cotton region. To-day the government issued a report showing hibernation to be heavy except in the recent flood areas of northeast Louisiana.

Comparison of boll weevils entering hibernation at various points in recent years:

Locality—	Year—	Live weevil per ton of moss— 1925	1926	1927
Tallulah, La.		280	242	21
Average northeast Louisiana		330	242	18
Average southern Louisiana		1581	192	457
Average South Carolina		52	48	1525
Average Georgia		39	359	220
Average Alabama				148

New Link-Belt Representatives.

Link-Belt Company, 910 South Michigan Ave., Chicago, Ill., announces that R. J. Tricon Co., 611 South Peters St., New Orleans, La., now represents them and their subsidiary, H. W. Caldwell and Son Co., in Southern Louisiana and Mississippi. The Tricon Company have been in the power transmission machinery business in New Orleans for many years. They will warehouse a complete stock of Ewart class and sawmill chain, stock sprocket wheels, silent chain drives, Caldwell Helicoid conveyor, and a complete line of Caldwell power transmission equipment.

C. O. Hinz, for twenty years associated with Link-Belt Company in New Orleans, will be associated with the Tricon Company, where his engineering experience will be available as before, it is announced.

Lowinson's Cotton Goods Chart for 1927.

Louis Lowinson & Co., 72 Leonard Street, New York City, is now distributing the Lowinson Comparative Cotton Goods Chart for 1927, showing the varying prices in cotton cloth and staple cotton throughout the entire year. Copies may be secured by those interested in cotton goods by addressing the company.

Book on Industrial Trucks and Tractors.

The Society for Electrical Development, 420 Lexington Ave., New York City, has published a book dealing with the efficiency and economy of the electric truck and tractor in industry. Chapters showing applications in sixteen major industries comprise articles covering 96 pages and 136 illustrations.

"THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE"

The foresight and sound scientific background that developed the *New* and *Better* TEXACO Gasoline (and made it the standard by which other automotive fuels are judged) control the quality and suitability for the purpose of every TEXACO Industrial Lubricant.

TEXACO

THE TEXAS COMPANY

Texaco Petroleum Products

Dept. C2, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

C. S. TATUM, who for several years has been superintendent of the Bonham Division of Consolidated Textile Corporation, at Bonham, Texas, has been made division manager and superintendent of the Pilot Division of the same company, at Raleigh, N. C. At Raleigh, Mr. Tatum succeeds T. B. Spencer, who recently resigned to become president and treasurer of the Cascade Mills, Mooresville, N. C.

HERBERT A. BUROW, assistant agent of the Postex Cotton Mills, Post, Texas, has been made superintendent of the Bonham Division of the Consolidated Textile Corporation, at Bonham, Texas, succeeding Mr. Tatum. Prior to going to Post, Mr. Burow was overseer of carding at the Bonham plant.

HOMER CARTER has been promoted to the position of superintendent at the Pepperell Manufacturing Company, Opelika, Ala. D. S. Cook is agent.

EDWIN M. CLAPP has resigned his position with the Fairbanks, Morse & Company and has become connected with the Georgia Power Company, Atlanta, Ga., as a power sales engineer. Mr. Clapp is well known to the textile trade of the South, as he has been connected with the industry in a sales capacity for several years.

L. W. GREEN recently resigned as superintendent of the No. 1 Mill of Bibb Manufacturing Company, Macon, Ga., to take charge of the Highland Cordage Mills, and the A. A. Shuford Mills, Hickory, N. C.

W. F. DENNING has resigned as assistant superintendent of the Wiseassett Mills Company, Albemarle, N. C., to become superintendent of the China Groove Cotton Mills, China Grove, N. C., succeeding C. G. Voss, resigned.

JAMES OATES, who has been general overseer of carding at Thomas Henry & Sons, Nashville, N. C., has been made general overseer of spinning, spooling and warping at the Adams Duck Mills, Macon, Ga.

ROBERT T. GRANT, who recently resigned as southern manager for the United Chemical Products Corp., Jersey City, N. C., is now southern manager for the Commonwealth Color & Chemical Co., of Brooklyn, N. Y., and has opened an office at 307 Commercial Bank Building, Charlotte. John Bennett is associated with him.

W. R. SMITH, who has been with the United Chemical Products Corporation for a number of years, will handle the affairs of the company in the South, with headquarters in Raleigh, N. C., following Mr. Grant's resignation.

HOWARD P. PARK has joined the Iselin-Jefferson Company, selling agents, and will be associated with F. L. Kenn in merchandising gray goods.

E. MONTGOMERY is treasurer and general manager of the Montgomery Knitting Mills, Summerville, Ga. E. W. Sturtivant is president. Mr. Montgomery was formerly superintendent of the Summerville Cotton Mills.

JOHN A. PORTER, factory manager of the Bibb Manufacturing Company, with headquarters in Macon, Ga., has been made assistant to the president, W. D. Anderson.

L. E. BEARD has resigned as assistant treasurer of the Aragon-Baldwin Mills, Whitmire, S. C.

J. H. COOKSON has resigned as vice-president of the Cleveland Cloth Mills, Shelby, N. C.

C. H. BEIDLER is superintendent of the Georgia Knitting Mills, Barnesville, Ga.

R. A. FAIRCHILD has become overseer of spinning at the Vance Cotton Mills, Salisbury, N. C. He was formerly connected with the Gaston Manufacturing Co., Cherryville, N. C.

JOHN T. TIDWELL, superintendent of Judson Mills, Greenville, S. C., died at the Greenville City Hospital on December 30th, following an illness of several months. He was 49 years of age, and had resided in Greenville for fourteen years. He was at one time superintendent of the Monaghan plant of the Victor-Monaghan Company, at Greenville.

JOHN F. MCNAIR, a prominent cotton manufacturer of Laurinburg, N. C., died recently at his residence. He was 84 years of age, and is survived by the following children: Mrs. Z. V. Pate, Mrs. J. A. Jones, James L. McNair and Mrs. G. F. Avinger. He was a stockholder and director of the Dixon Cotton Mills, Scotland Cotton Mills, Waverly Cotton Mills, and Prince Cotton Mills.

JAMES H. MORGAN, organizer and for many years president of the American Spinning Company, Greenville, S. C., died suddenly on January 10th at his home in that city. He is survived by Mrs. Morgan and two sons, Clinton J. Morgan and James H. Morgan, Jr.

P. C. BROOKS has been elected a vice-president of Fairbanks, Morse & Company. During a connection of 29 years with the organization Mr. Brooks has held many positions of responsibility and in addition to his present office he is president of E. & T. Fairbanks & Co., the scale manufacturing subsidiary of Fairbanks, Morse & Co. He is also vice president of the Canadian Fairbanks-Morse Company, Ltd. Mr. Brooks is a graduate of the Georgia School of Technology.

W. A. MCNEACE has resigned as overseer of weaving at the No. 3 Mill of the Republic Cotton Mills, Great Falls, S. C., and has accepted the position of overseer of weaving at the Slater Manufacturing Co., Marietta, S. C. B. D. Cox, formerly with the Republic Cotton Mills, has accepted a position as second hand in the weave room at the Slater Mfg. Co., Marietta, S. C.

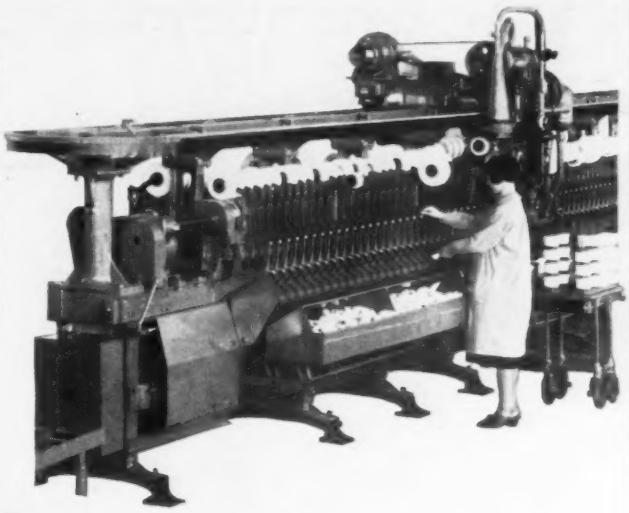
E. J. BOSWELL, who recently resigned as overseer of spinning at the Elberton Cotton Mills, Elberton, Ga., to accept a similar position at the White Hall Yarn Mills, White Hall, Ga., has been promoted to the position of general overseer of carding and spinning at the latter plant.

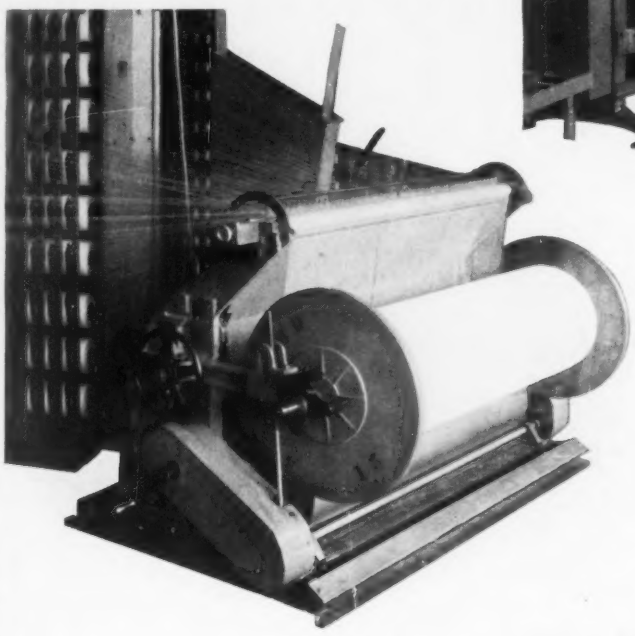
JOHN M. GETTYS, for more than 25 years connected with the management of the Victoria Cotton Mills, Rock Hill, S. C., has been elected president. For a number of years he has been vice-president and general manager.

AUTOMATIC SPOOLER

Spooling Speed—*1200 Yards per Minute*

Air friction furnishes the spooling tension—necessarily low and uniform, retaining the original elasticity in the yarn. The Weaver's Knot causes less trouble in the processes which follow spooling.
Result—better product and greater production at lower cost.





HIGH SPEED WARPER

Warping Speed—*500 to 600 Yards per Minute*

Twenty minutes or less is the time two operators usually require for creeling a Barber-Colman High Speed Warper—twenty minutes from the time one beam is finished until the next is ready to start. Compare this with the time required by the method now commonly used.

On November 1, 1927—56 representative Cotton Mills were using or had on order:

243 Automatic Spoolers
186 High Speed Warpers

This equipment will improve conditions in your mill

BARBER-COLMAN COMPANY

GENERAL OFFICES AND PLANT
ROCKFORD, ILL., U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.

20% Reduction In Seconds

Through the Use of U S "E" EYE AUTOMATICS

This is a report from one superintendent of weaving who recently started using the new U S "E" Eye automatic shuttles.

Features that Make for Better Fabric

Easy natural positive threading.
Freedom from mispicks—double picks—cut filling.
Freedom from broken filling on the transfer.
Filling gets down into the delivery eye on the second pick and stays there.

Announcement

We are now
Selling Agents for
APCO-MOSSBERG CORP.
All-Steel Loom Beam Heads
All-Steel Section Beam Heads
All-Steel Adjustable Beam Heads
All-Steel Beams

Six years of development along similar principles are behind our "E" eyes. They are new but still not new. They are the fifth in line of a series of easy and positive threading eyes, each one of which has in its turn embodied additional features of value or emphasis on good points. Every detail for improvement suggested by weavers on all classes of filling has been incorporated in the new "E" eye. They will run cotton, wool, worsted, jute, silk, or rayon equally well. It makes no difference whether the yarns are soft spun or hard twisted. Tension can be controlled as in no other eye.

Can Loom Stops, due to Shuttle Imperfections, be reduced in your mill?

Over 12,000 "E" eye automatics are now running. In the short space of three months, since we put these eyes on the market, over forty mills have unqualifiedly approved and adopted U S "E" eye Automatic Shuttles for all replacements.

Send a sample shuttle showing your size, together with a filled bobbin of the coarsest yarn you are now running, and write, wire, or 'phone for yours today.

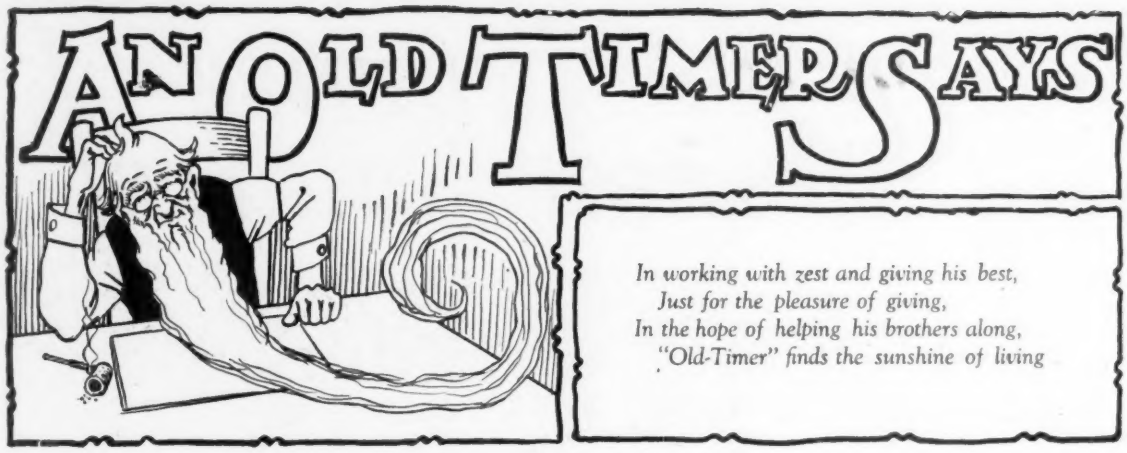
U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.
Greenville, S. C.

Branch Offices:
HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

U S salesmen are specialists on bobbins, spools, and shuttles. Order direct from U S for real helpful and understanding service


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

Sometime ago I was asked to talk to the graduating class of a textile school; in fact, I was asked to make a speech, but this I refused to do because I knew those boys were rather fed up on speeches.

I told the director of the school that I would prefer to talk to the boys in just plain United States, so to speak, and see if I could not say some things to them that they would remember not only the next day, but next year and in the years to come when they were out in the world battling for a living.

As they were students about to finish their college career and of course thought that four years of study was enough for any young man, I knew they had a vague idea that they were through with studying and that their minds were tired anyway.

I was trying to show them that now was the time for them to *start* studying—that they had a foundation of textile education now to build on if they would only realize that there was no danger of their overtaxing their brains with study.

I made this illustration:

"Boys, you have seen many large containers, barrels, hogsheads, large tanks, etc., but you have never seen one so large but what it could be filled up have you?

"The Southern Power Company has large reservoirs that hold billions upon billions of gallons of water, but they can all be filled up.

"It looks as though it would be hard to find anything in the world which could not be filled up, doesn't it?

"Well, I can tell you something that can never be filled up:

"It is a human brain.

"It matters not how much you study—how much you read—how many studies you take or how much you learn—that brain of yours is always ready for *more.*

"And the strange fact is, that the more you put into it, the greater capacity it has.

"Putting knowledge into that brain of yours is just like putting money into the bank—except that the money can be taken out of the bank but knowledge put into your brain is there to stay and no one on earth can take it away from you."

Now why all this palaver about a talk I made to a bunch of young men who had never worked in a mill?

What are you telling us overseers and superintendents about it for?

Because, my dear reader, that same reasoning applies to *you.* You, my brother overseer and superintendent, it matters not if you have been overseer or superintendent one year or twenty-five.

You should wake up to the fact that we are living in a fast moving age—an age of the greatest progress the world has ever seen, and above all, an age that is making the textile industry of the South one of the greatest opportunities for us overseers and superintendents that there is in any line of industry.

In all my thirty years of experience in the mill, I have never seen such wonderful opportunities for the overseer or superintendent who stands out above the crowd.

There are more good jobs begging for men than there has ever been before, and do you realize that the jobs are multiplying like rabbits in the spring time?

With the South taking portions of the textile industry away from New England like it is and with the natural expansion that has to come with increased population of the world—well, darned if I know what the industry is going to do for men (I mean overseers, superintendents and managers) in the next few years.

The thing that I can't understand is why you don't wake up and begin to prepare yourself for one of these good jobs that are coming just as sure as taxes.

Run that job you are on so that it will be an advertisement for you!

Just say to yourself: "I have every dollar that I possess invested in this job and I am going to run it that way. I am going to build up an organization of help and section men that will beat the whole country around here." And remember, brother, it depends absolutely on *you* as to what kind of help you have in your room or mill. I oftentimes hear overseers and superintendents say, "you can't get section men to take the interest in their work that they did when I was running a section," "the help don't give a damn these days," and all that kind of excuses—

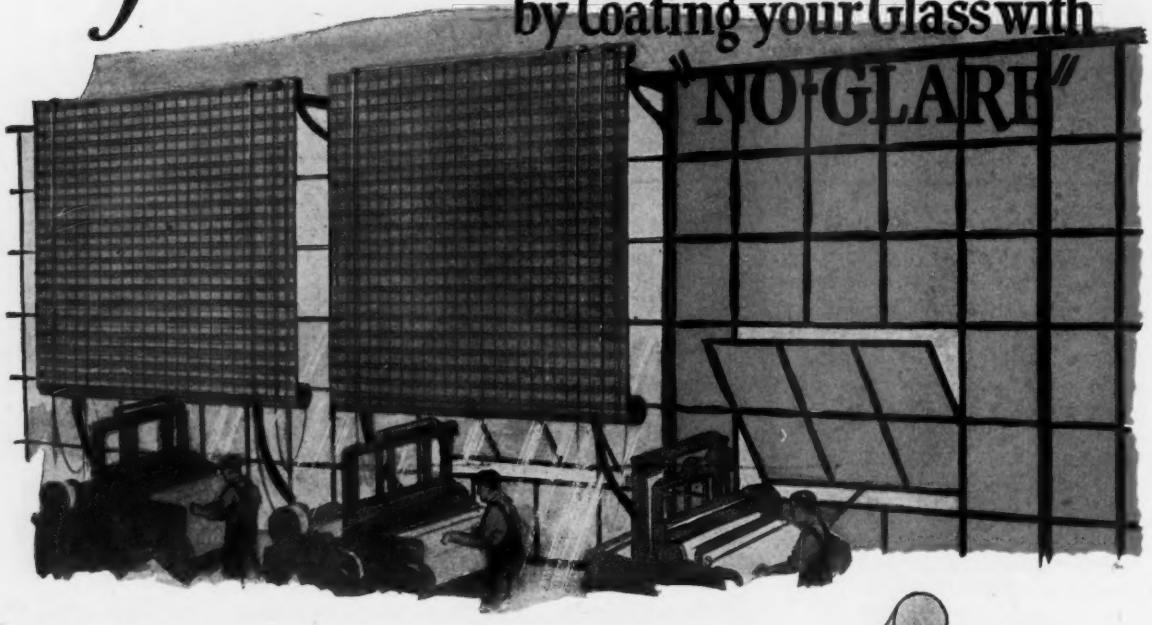
That is all bunk. "Old Timer" can take you to mills that are just simply beating any records you ever heard of when *you* were a section man.

You need to get a new start on your job and begin to do some of the things that you know should be done to build up a better organization, which will result in an increase in your production and a reduction in your costs—your seconds and your supply bill.

All these things are easy for you, because if you are much of an overseer or superintendent you know how to do them if you will just get out of that rut you have fallen

Save the Expense of Window Shades!

by Coating your Glass with "NO-GLARE"



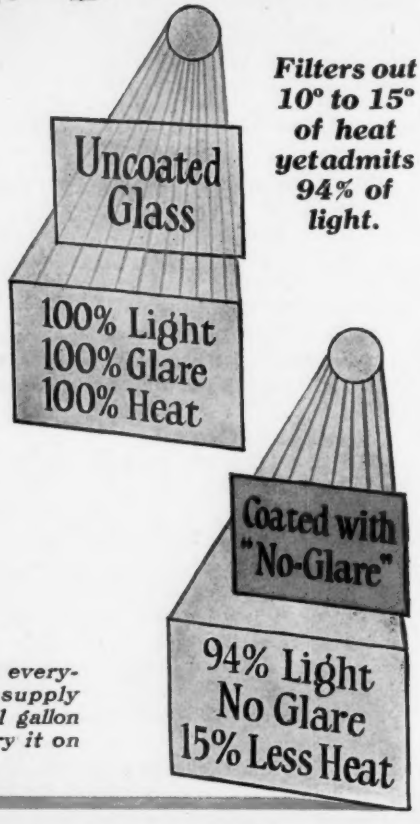
SKYCO *No-Glare* has all the advantages of window shades and blinds and none of the disadvantages. *No-Glare* is a sky-blue liquid that when painted or sprayed on the window forms a translucent film that *filters the sunlight*, admitting 94% of light but eliminating the glare and from 10° to 15° of the heat. Thus you get a *diffused* light that is ideal, cool and restful.

The use of *No-Glare* eliminates the expensive installation and maintenance of window shades and saves the time spent in adjusting the shades two or three times a day to meet the changing light conditions.

Goes on OUTSIDE of Glass—yet rain or weather conditions do not effect SKYCO No-Glare. Neither will it rub, or flake off. Yet you can remove it easily with warm water and a brush. *Just as effective if applied on inside of glass.*

Very economical—costs less than ½¢ per square foot of glass coated. One application lasts through the sun-glare season.

THE SKYBRYTE COMPANY
1190 HANNA BUILDING, CLEVELAND, O. *Chicago Branch: 104 So. Michigan Ave.*



Filters out 10° to 15° of heat yet admits 94% of light.

SKYCO No Glare

Used by textile mills everywhere. Sold by mill supply houses. Order a trial gallon today at $3.50 and try it on a "glary" window.

into and go after that job like you went after the first overseer's job you ever had.

Remember how pepped up you were? How you just had something to do every minute of the day and the days were not half long enough? How you watched every operative's production? How you talked it over with him if he was behind? How you kept right in behind your section men all the time to keep your machinery in first class running shape so the help could get the production?

Sure you remember all about that job and how proud you were when you passed the record of the man who held the job before you.

Well, now why in the —ell don't you go down after it again like you did then?

There is no need to continue talking to you about these things because you can do them again if you have the determination to do it, but what you need along with running that job so it will be an advertisement for you is to start a line of study to improve your knowledge, and that is not so easy.

But when you begin to think of the rewards it will bring you if you will prepare yourself with the knowledge that will equip you for that bigger job, I do not see how you can refrain from entering into a system of study that would give you a college education in two years.

What do I mean, a college education in two years?

Well, guess you did not read that "Old Timer" article about how a man could study at home nights and get the equivalent of a college education in half the time it takes the young man to get it at college. Anyway it is a fact.

Are you going to let the South progress faster than *you* do? Why not get in line by improving your knowledge of mill calculations, of mill processes, of mill engineering in general, of commercial view, of business ethics, a little taste of mechanical drawing. A course of reading which will increase your vocabulary and improve your conversation so that you can feel perfectly at ease in company with educated men.

Hurry, Mr. Overseer and Superintendent, or the job will get here before you get ready.

"Old Timer" is willing to go on record as saying that the southern states is not only the greatest country in the world, but will offer the greatest opportunities for the textile man (overseer, superintendent and manager) there has ever been before in the history of textiles.

Get ready!

New Southern Manager for United Chemical Products Corporation.

Robert T. Grant has resigned as southern manager of the United Chemical Products Corporation, of Jersey City, N. J., and the company states that W. R. Smith, of Raleigh, N. C., who has been representing the company for some time, will be in charge of the southern business.

Blum Goes With Sonneborn Sons.

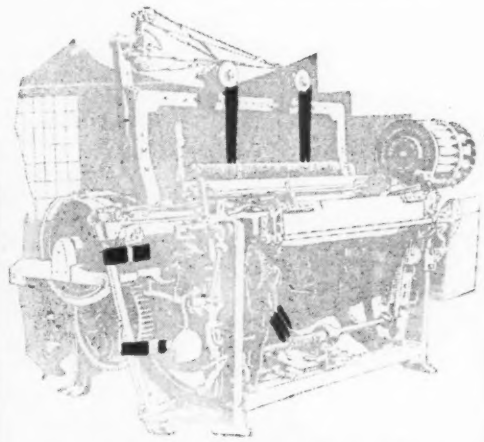
H. A. Blum has recently become connected with L. Sonneborn Sons, Inc., representing the company in South Carolina, Georgia, Alabama, Mississippi, and Louisiana. Mr. Blum has been selling sizing materials to the textile trade in this territory for the past five years, and his experience equips him for the handling of Sonneborn products in this industry.

Bondaron

REG. U. S. PAT. OFF.

The Original and Genuine Leather with the hair on.

Textile Leathers



QUALITY LEATHER

Cut Your Loom Leather Costs in Half

Textile leathers are small items individually, but when you add up the costs of all leathers used for the past several years, the items amount to a pretty good sized bill. Add to this cost the time lost from stoppages and replacement of straps and the like, the cost of picker stick breakage on account of poor lugs and the item will still be somewhat larger.

Thorough tests have shown that "Bondaron" Leathers last from three to five times as long as other leathers on the market. You can at least cut your loom leather costs in half with "Bondaron" products. The secret of their long life and incomparable service is superior quality hides tanned by a well guarded special process which adds greatly to the tensile strength, pliability and general serviceability.

It means REAL ECONOMY to standardize on Bond Products for all textile leather requirements.

OTHER PRODUCTS MADE FROM BONDARON, BONDURAL OR BONDEX LEATHERS:

Check Straps
Lug Straps
Harness Straps
Picker Straps
Spindle Straps
Shuttle Straps
Loom Pickers
Cone Belts
Round Belting
Flat Belting

Spinner Belting
Twister Cots
Condenser Aprons
Worsted Aprons
Bunters
Picker Leatners
Apron Leathers
Belting Butts

Oak Tanned Slabs

Lace Leather
Valve Leathers
Back Straightenings
Filleting Leather

English Sheep Skins
Persian Sheep Skins
English Roller Bends
English Calf Skins

Write for booklet 101

Manufactured exclusively by

CHARLES Bond COMPANY

Leather Curriers and Manufacturers of Belting and Textile Leathers

617 ARCH ST., PHILADELPHIA, PA.

Mergers

THE MERGER is the practical, modern-day method of *reviving the fittest. Survival* of the fittest today is not enough. *Revival* is necessary—new life, new energy, new effort—economically.

The Merger is much more than just getting together. It picks the best of the necessary and the vital from many similar efforts and makes them into one supreme accomplishment.

One major value of the Merger is the opportunity it presents for *eliminating waste in industry*—not alone of time and material, but the larger mental and physical wastes—duplication of efforts, capital, organization.

The elimination of waste from American business during recent years now represents a saving of nearly $1,000,000,000 a year and is mainly the result of following the constructive suggestions of the Hoover Committee on Waste in Industry. Mergers are helping very materially to increase this saving.

The Merger is no plaything. Every detail, from its conception to its smooth and effective operation, demands *exact knowledge* based, not alone on facts and figures, but on intimate and practical Accounting experience in many fields and nation-wide in extent.

ERNST & ERNST

ACCOUNTANTS AND AUDITORS—SYSTEM SERVICE

NEW YORK	WASHINGTON	DETROIT	CLEVELAND	CINCINNATI	ST. LOUIS	CHICAGO	DALLAS
PHILADELPHIA	BUFFALO	GRAND RAPIDS	AKRON	DAYTON	KANSAS CITY	MILWAUKEE	FORT WORTH
BOSTON	ROCHESTER	KALAMAZOO	CANTON	LOUISVILLE	OMAHA	MINNEAPOLIS	HOUSTON
PROVIDENCE	PITTSBURGH	ATLANTA	COLUMBUS	HUNTINGTON	MEMPHIS	ST. PAUL	SAN ANTONIO
BALTIMORE	WHEELING	MIAMI	YOUNGSTOWN	NEW ORLEANS	DAVENPORT	INDIANAPOLIS	WACO
RICHMOND	ERIE	TAMPA	TOLEDO	JACKSON	DENVER	FORT WAYNE	SAN FRANCISCO
WINSTON-SALEM							LOS ANGELES

ALL KINDS OF
RUBBER COVERED ROLLS
Stowe & Woodward Company

Newton Upper Falls, Mass., U. S. A.

STODGHILL & COMPANY

510 Stewart Ave., S. W., Atlanta, Ga.

"*The* Size That Satisfies"

Sizing Compound "V" — TALLOW, GLYCERINE, GUMS, DEXTRINE, PRESERVATIVE, WATER

Contains no Chlorides, no Mineral Salts, and no Mineral Oil.

Sizing gums and weighting gums. . . .

Our prices are right for the quality of products.

Emulso Tallow — TALLOW, WATER

The perfectly emulsified product. Contains no Gums, Acids or Alkali.

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

Wants Glue for Card Scavenger Roll.

EDITOR COTTON:

I would be glad to have some of your readers advise their opinion of the best cement or glue to use on the scavenger roll on the back of the card. I want something that will hold the cloth to the roll, and would like to get the formula used as well as the different methods of preparation and application. W. R. (S. C.)

Why the Shuttles Break.

EDITOR COTTON:

Referring to the question of "T. T. (N. C.)," who says:

"I am having quite a bit of trouble with shuttles bursting or breaking, on the front of the shuttle at the spring end. We have Draper looms, 40-inch E-Model, running about 166 picks per minute. The power is off the looms and the shuttles do not show any bruises or scars from rolling in bobbins, or the transferrer hitting the shuttle and they are not thrown out."

I am of the opinion that the transferrer is causing the trouble. It may be hitting the spring and still not bruising the shuttle. If the box is loose enough so that the shuttle can be pushed in and out with a reasonable amount of force, and the power off, and the shuttle not hitting one side of the box, then it seems that the transferrer must be causing the trouble.

I would suggest that "T. T." see that the boxes are properly lined up; that the leather is in good shape and that the binder is not too tight. This, with the power off the loom and the transferrer striking properly, should give good results. It might be advisable to try running a loom at 158 to 160 picks to see what effect that might have. 166 picks seems a little too high.

J. W. C. (TENN.)

EDITOR COTTON:

This replies to the question of "T. T. (N. C.)" with reference to shuttles breaking on the front side spring end. He says he is having quite a lot of trouble in this respect.

In regard to this I will say that automatic looms give the same trouble more or less. I don't think that the cause can be entirely eliminated. There are a lot of things that will cause this trouble, but it is always the position the transferrer is in when the shuttle is broken.

It is quite hard sometimes to decide why the transferrer did not function correctly. I find that a lot of the trouble is caused by the battery failing to revolve and put the bobbin in its proper place at the time it is being transferred to the exhausted shuttle.

A good remedy for this, if "T. T." is running a No. 3 Draper battery, is to equip the battery with a Stimpson battery feed. This is a sure feed. Next, is to see that the pitman arm is of correct length. I find that with narrow looms, having wooden pitman arms, this has to be looked after; if not, the lay will soon get out of the correct position.

Now see that the latch, that is, the casting that strikes on the iron bunter on the lay, causing the transfer of the bobbin, is not worn so that it will slip away from the bunter while in action. If worn, take the latch off and file it to the proper shape, or replace with a new one. When a partial transfer takes place it causes the bobbin to lay on top of the shuttle spring, and when the lay is on the back motion the bobbin strikes on the bottom of the battery, causing a broken shuttle. I find that a shuttle going too far in the box at the time of the transfer will cause it.

Since equipping my looms with rocker rail jacks I find that they have eliminated a lot of this trouble. These jacks go on the floor, one on each end of the rail on a forty-inch loom. They are adjustable, up or down. Care should be taken that they are not set too tight, as they will throw the shuttle race out of line.

There is a bobbin support on the market, which I am using, that I think is away ahead of the casting support that comes with the battery. This is something that will cause breakage.

"T. T." says that he greases his shuttles with tallow on week ends. Putting grease on the grooves of the spring is all right, but as to putting it on the shuttle, I have seen it done with disastrous results.

P. T. S. (ME.)

EDITOR COTTON:

Replying to the question of "T. T. (N. C.)" who is having trouble with shuttles bursting or breaking at the spring. First, I would suggest that he see personally that the shuttle box back plates are lined up perfectly with the reed, and see that point of the shuttle is in the center of the slot through which the picker stick works; then see that the picker is straight with the shuttle and properly paralleled. This is one thing that some loom fixers are just a little careless about sometimes. It will cause the shuttle to be thrown just a little out of line and slap and rattle as it enters the shuttle box mouth at the opposite end of the lay. Like the constant dripping of water wearing away a stone, this continual slapping of the shut-

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

With many textile mills moving whole plant units closer to raw materials . . . taking every known means to reduce production costs because of intensifying competition—

Where is the profit in ignoring the *known savings* effected by Utsman Feeler Bobbin cleaners?

Savings in time, labor, money. Elimination of production tie-ups by assuring a continuous supply of perfectly cleaned quills. Forty thousand bobbins cleaned a day with single end Utsman. Eighty thousand with double end Utsman. And no split ends.

These economies are being taken advantage of by hundreds of plants. We will gladly make an estimate of the savings which can be made in *your plant*. Write today for full details.

The TERRELL MACHINE CO. Inc.
Mfrs. Termaco, Utsman, Type K, Etc. Machines
CHARLOTTE, N. C.

General Supply Co. Danielson, Conn.
N. Y. and N. E. Representative.

tle will finally "get" it somewhere. The setting of the harness has quite a lot to do with this shuttle slapping, too.

The next thing is to look over the setting of the transferrers and set the lay far enough forward so that when it is on front center, the transferrer is about one-eighth inch past the center of the shuttle spring. Some fellows will say this is wrong, and the transferrer should be directly over the center of the shuttle spring when the lay is on front center. But reason it out this way—you know that on the transfer, when the lay has reached front center, the new bobbin has already been placed in the spring, and has necessarily pressed against the front of the shuttle to some extent in getting there. Now, if the transferrer is just a little past the center of the shuttle spring it gives the bobbin that much more room to get away from the front of the shuttle. This may not sound just right to some of the readers, but in my experience I have found it to be the best setting.

Another thing that will burst or split the shuttles is for the bobbin which is being pushed through the shuttle, from any cause not engaging with the spring; one end will go through and the other end will stick up high enough to strike the battery and break the bobbin. If the shuttle box mouth is open too wide at the battery end this will burst the shuttle. A great many weavers will not call a fixer to a loom in cases like this; possibly the shuttle is cracked slightly and the weaver does not notice it, so he runs it on until it finishes the job of splitting out, and nobody knows how it happened.

The shuttle rebounding slightly in the battery end will cause the bobbin to miss the shuttle.

If "T. T." has more shuttles split during the first of the week than during the last part, he can lay his trouble to shuttle rebounding and missing the bobbin and the weavers not having the looms fixed. And he can lay the shuttles rebounding to tallowing his shuttles every week-end, as he says he does. When starting up on Monday morning, the tallow has not worked into the grain of the wood and there is trouble boxing the shuttles on Mondays. Tallow is all right if too much is not used. My way of using it on shuttles is for the fixer to go over his section while the looms are running and the shuttles are warm enough to absorb the tallow, putting on just as much as the shuttle will absorb and starting the loom again, seeing that the shuttle is properly boxing up before leaving it to tallow another one.

I believe "T. T.'s" speed is a little too high for a 40-inch loom, too. If he will cut it down from 166 to 156 picks, I believe he will have less shuttle trouble.

The shuttle is the heart of the loom and is a thing to be looked after very carefully. When a new shuttle is lost, the profit on one loom for several days is gone. It is impossible to catch all the movements of the shuttle with the eye; there is quite a bit of reasoning to be done with the head. From experience, I believe it is time well spent to get the loom fixers all together for fifteen or twenty minutes once every week and discuss little problems like this. To exchange ideas is helpful, and having a meeting this way makes a fixer feel like he is helping to get along, and so he is. And it does not hurt any man to tell what he knows about fixing looms. If a boss weaver has a set of loom fixers who can tell him something about fixing looms, and will listen to reason and let them try out ideas of their own, he will most assuredly run his job. A good rule is: Never reject a suggestion unless you know enough to tell *why* you reject it, and never have a thing done in a certain way unless you are able to tell *why* you do it.

JACK (TEXAS).

EDITOR COTTON:

Referring to the question of "T. T. (N. C.)" concerning shuttles breaking on the front wall near the spring end, he states that the shuttles show no marks or bruises caused from bobbins rolling in over the front wall of the shuttle or from the transferrer striking the shuttle. He does not say whether there are any marks on the shuttle that might be caused by the shuttle feeler.

I assume that this contributor's looms are set to transfer from the filling fork when an end breaks or when the bobbin runs empty. There is a common tendency on the part of many loom fixers not to give the shuttle feeler proper attention. The result of such carelessness in some cases is that the shuttle feeler is timed too early and on the transfer is thrown forward before the shuttle is completely boxed in the right hand box. This might cause the shuttle feeler to strike the front wall of the shuttle near the spring. It is easy to see how repeated blows of the shuttle feeler would in this way cause the shuttle to break. However, these blows would make an easily discernible mark on the shuttle.

Any condition where the shuttle breaks without being thrown from the loom and does not have a mark of any kind to show what caused the break is most unusual. The continued hammering of the picker stick and the sudden checking of the shuttle of course put a strain on the shuttle, but this should not be sufficient to cause shuttle breakage unless the shuttle is made of cross-grained wood. Wood of this type is naturally weak, and while it is possible that occasionally a shuttle may break from this cause, it isn't likely that a number of looms would be running with such shuttles.

It is possible that the protector rod springs set too tight might cause shuttles to break and never leave a mark as evidence of what caused the break. When the shuttle enters the box it is necessary that the binder be forced back and in that way raise the dagger finger to prevent the loom slamming off. When a shuttle strikes a binder that is held with too much force by the protector rod spring it naturally seeks the path of least resistance and consequently is forced against the front box plate. This pressing of the shuttle between the binder and the front box plate would have a tendency to bend the walls of the shuttle in toward each other and eventually cause the shuttle to snap.

In order to start a helpful discussion as to the many things that cause shuttle breakage it might be well to mention a few of the most common sources of this trouble although they are irrelevant to the question asked by "T. T. (N. C.)"

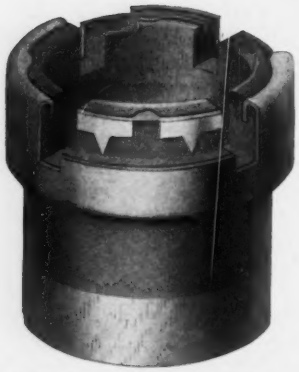
Bobbins rolling in over the front wall and the transferrer striking the shuttle are two causes of shuttle breakage that are often encountered. These conditions are brought about by the shuttle not being in the proper position relative to the downward stroke of the transferrer. To remedy this, loom fixers often move the front box plate as far forward as possible and then tighten the protector rod springs so that the binder will push the shuttle forward and under the transferrer in the proper place.

The best way to remedy the foregoing trouble is to

WILSON BROTHERS BOBBIN Co LTD

BOBBINS & SHUTTLES

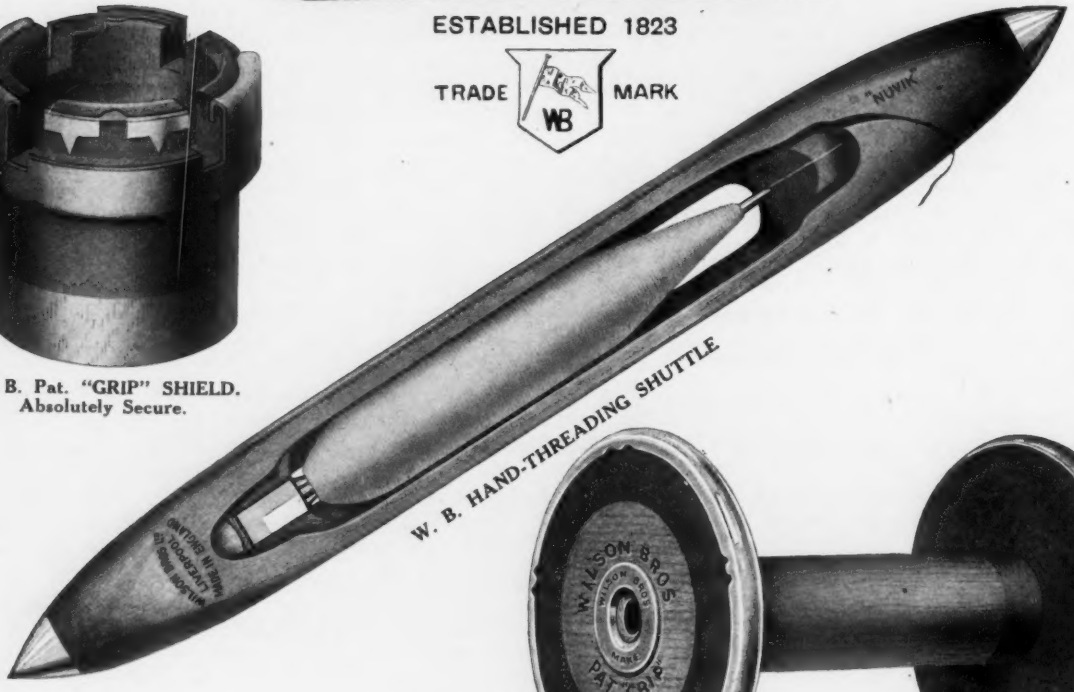
for the TEXTILE TRADE.



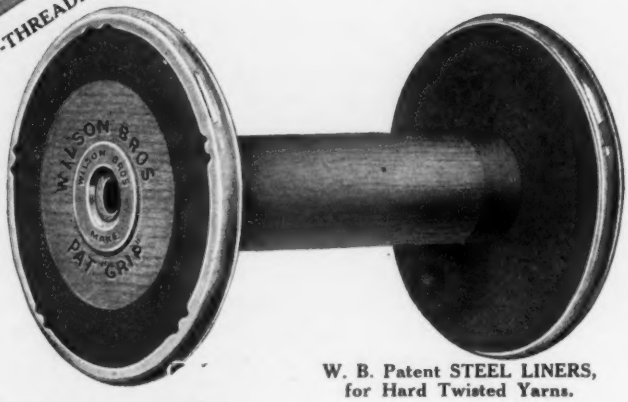
W. B. Pat. "GRIP" SHIELD.
Absolutely Secure.

ESTABLISHED 1823

TRADE MARK



W. B. HAND-THREADING SHUTTLE



W. B. Patent STEEL LINERS,
for Hard Twisted Yarns.

CARDROOM TUBES,
RING BOBBINS,
WINDING BOBBINS,
PIRNS, &c., &c.

Largest Makers in the World.

WILSON BROS. BOBBIN CO., LTD.,

Telegrams : "NUGGET, LIVERPOOL."
Codes : A B C, A1, & Marconi.

GARSTON,

LIVERPOOL.

—*Agents* **LEIGH & BUTLER,** *Boston, Mass., U. S. A.*

carefully examine rocker shafts and bearings and the crank arms and replace any that are worn. A badly worn rocker shaft will allow the lay to jump forward and upward on the beat-up. As the lay reaches the front center it then begins to drop back to its original position, this position being determined by the worn rocker shaft. It is impossible to transfer the bobbins under the foregoing conditions without rolling the bobbin in over the front wall of the shuttle.

Worn crank arms cause bobbins to roll in on the front wall and also may cause the transferrer to strike the shuttle. This happens because worn crank arms will not push the lay far enough forward to place the center of the shuttle opening beneath the transferrer at the proper point. The transferrer of course swings in an arc and when the lay is not pushed forward enough the transferrer is bound to strike the shuttle and cause serious damage. Looms on which the rocker shafts and bearings and crank arms are in good condition will give very little, if any, of the troubles discussed herein.

On shuttles where feelers are used the slots are sometimes cut longer than necessary and this weakens the shuttle on the front wall near the spring end.

Another thing to which far too little attention is given is the proper lining up of reeds and back box plates. I have often seen looms where the shuttle would strike the center of the reed and both ends of the reed or the back box plates on each end in traveling from one box to another. This trouble is easily located simply by walking along between the looms because the shuttle in striking these points will cause a distinct noise at each point where it strikes. It is possible for a loom to keep running when in this condition but at each place where the shuttle strikes the shuttle is being gradually cut away and will finally wear down the back wall so thin the shuttle will break.

T. E. W. (GA.)

EDITOR COTTON:

I note in the October number of Cotton an inquiry with reference to shuttle breakage and would like to state at least one cause of this difficulty.

Very often the bobbin supporter will cause shuttles to be broken unless properly packed. There should be just enough packing put in the spring so that when the supporter is pushed down as far as it will go it will just clear the top of the shuttle when the lay is going from the front center to the back center, and care must be taken that too much packing is not used to prevent the free passage of the quill from the magazine to the shuttle.

I trust that this suggestion will be of some help to your contributor. CONTRIBUTOR NO. 884.

Overcoming Static on Dyed Cotton.

EDITOR COTTON:

In the January number, "E. D. (N. H.)" said he has changed from white to dyed cotton, and is having trouble with static on his drawing, etc. I am glad to extend a helping hand as I have been in the same fix. He asks for "the mixture of salt solution which is sprayed on the laps in the picker room."

I am not familiar with any system of spraying laps in the picker room with a salt or any other kind of solution, and any such arrangement looks rather like an unnecessary amount of trouble. The only advice I can give our friend about this is to forget it. There has been a lot of talk spread around about the best method of restoring to cotton its original waxy covering when this has been boiled off in the dyeing. My opinion is there have been an amazing number of useless and sometimes harmful substitutes on the market which never replaced anything but one dyer with another less credulous.

How much of this waxy covering is actually lost, I am unable to say, never having spent any time trying to find out. As it didn't seem to make much difference to the cotton, I couldn't see why it should worry me. The whole truth of the matter is that whatever running qualities the cotton loses in the dyeing can be very easily replaced by the use of a little salt.

After the cotton has been dyed and washed thoroughly, my method is to close the drain valve, resume the circulation of water through the cotton, bring to about blood heat, put in about three per cent salt, and run until all the salt is dissolved in the water and worked into the cotton—about fifteen minutes. That is all that is necessary. Then I drain this off without any further wash, extract and dry. The hygroscopic quality of the salt will attract enough moisture to keep the cotton pliable and soft provided it is not dried too bone dry in the dryer.

I have heard people say that salt on the cotton will rust the wire on the cards. I have been using salt several years in this manner, and have inspected a number of cards in various mills with this idea in mind, and I cannot truthfully say that I have ever known card clothing to be damaged from this cause.

I have frequently seen a water pipe rigged up over the extractor for the purpose of washing the stock as it is being whizzed. This is a good scheme if the shade is heavy, or if there is a lot of insoluble matter in the dye which will collect on the bottom and outside edges of the batch, but only for that part of the batch. The main body of the batch should be whizzed without the additional wash, otherwise the salt will be lost and static will have a chance to get in its dirty work. All this of course is for the so-called vacuum machines, but the last salt wash can be applied equally as well in the rotary types.

In drying, it is essential that the stock come out of the dryer with a reasonable amount of moisture left in it. It should not be bone dry. The easiest way to determine this is to wait until the cotton cools off and then run the hand into the pile. If an occasional wet and clammy place which is just about the consistency (?) of a dead fish can be felt, it is about right. It must not be too wet, however.

That's all I know about it, and it isn't much. I have run dyed stock several years very successfully by the observance of these simple rules:

First, select good cotton. As good at least as the rest of the work. The dye won't cover up defects in the cotton.

Second, have it run through openers or pickers, if possible, before dyeing. Dyed or bleached stock will not clean as readily as white cotton.

Third, give it a final salt bath in the dye machine and leave the salt in it.

Fourth, do not dry the stock too dry, and of course, do not leave it too wet.

Fifth, do not let anybody talk you into using some kind of an oil as an after-treatment. Oil serves a useful pur-

pose on yarn in certain cases. It is positively of no use on raw stock, in my opinion, and I have tried it enough to swear off for the rest of my cotton mill career.

Sixth, dump your standing bath, if you have one, at reasonable intervals. I have been told this was not necessary, but have never been smart enough to avoid it.

Whenever I have been in trouble due to static or bad running dyed work, it has been due to the neglect of one of these rules. NaCl (Ga.)

Editor Cotton:

In your January number "E. D. (N. H.)" asked concerning a suitable spraying material for dyeing raw stock cotton in order to reduce static. He wanted to know the mixture of salt solution to be sprayed on the laps in the picker room.

Dyed raw stock gives more trouble than white stock due to the fact that all natural lubricant has been removed in the dye bath and the surface of the cotton being rougher, creates more friction in the course of machining. The increased friction produces more static electricity and this causes the fibers to flare out and try to separate from one another.

Having the foregoing situation in mind, the problem of treating this cotton to obviate the difficulty can better be solved. Unquestionably, a salt solution will help dissipate static, electrical disturbances on the surface of the fiber, since the salt solution is a good conductor of electricity, and static electricity cannot be formed when it is carried away or to the ground as fast as it is generated. However, there is a strong opposition to the use of salt of any kind on cotton, for the reason that it is very apt to rust the card clothing and perhaps cause trouble in after finishing operations.

The questioner wishes to know what salt to use in spraying. Any salt will work from an electrical standpoint. Magnesium Chloride is cheap and has the added advantage of being able to absorb considerable moisture from the air. Common Sodium Chloride or table salt will work, but in its pure state will not absorb additional moisture.

A suitable spray can be made of a soap solution and has few objections to its use, provided that the soap is made from high grade materials and not given to turning rancid.

If the mill man in question is not opposed to the use of oil either by prejudice or reason, it might help him. Suitable oils are on the market which will not become rancid or dry up on the cotton. The writer has always believed that from a theoretical standpoint a mixture of one half oil and one half water is best.

This means that an oil must be obtained which will mix with water. Sulphonated castor oil is on the market in many forms and trade names. It is a so-called soluble oil. If this oil is perfectly sulphonated and free from acid, it will be all right.

As a general rule, the writer believes that an emulsifiable mineral or vegetable oil is best for all cotton spraying. If vegetable oil is used, it must be non-drying.

The percentage of any of these sprays which will give the best results must be determined by experiment. It is certainly true that this percentage will be much less than the mill man imagines. He should start at about one-third pound of spray per one hundred pounds of cotton and work up to about one pound as a maximum.

The application of the spray will be found best in the first opener hopper. A suitable regulating means must be used which will permit close regulation as to quantity. An atomizer spray head using compressed air can be used. These heads are for sale by the various humidifying firms.

C. O. (Ga.)

Waste at the Drawing Frames.

Editor Cotton:

In his practical letter on waste at the drawing frames, published in the "How Other Men Manage" department of the August issue of Cotton. I can but agree with "Wash (R.I.)" on the manner in which he has handled this matter. He speaks from a practical standpoint concerning the operations of a frame and the manner in which he requires the foreman to be responsible. He is right. So many times a frame tender has caught "hell", so to speak, when it was not his fault. But as "Wash" states, it is the manner in which the operator has been or has not been instructed to do his work. The main thing is for the foreman to put the machinery in shape and keep it so; then there will not be so much waste or so much room for him to "raise hell." This thing of raising hell is fast becoming a thing of the past.

The foreman should get together with the operator, show him, hang around with him, and let him understand the situation as it is; let him know how the foreman wants the thing done. He should keep in close touch with and show the operator the best way to do it.

The sooner the foreman and the operator get in close touch with one another, the sooner better work will be done. Ordinarily, an operator will do as the foreman instructs him, providing the foreman will live up to his teachings and the operator will be respectful in his duties. So many foreman give orders for certain things to be done and do not follow the order up to see that it is understood and carried out. We often say: "I have so much to do that I cannot follow up those details, especially with an assistant to look after them." But, there is time and it can be done while on the rounds, so to speak, and the assistant will respect orders more if he finds that his superior is following them up and means for them to be carried out. Also he feels if there is any doubt in his understanding of the orders that his superior is close by and can be consulted in case there is need of more light on the situation. This causes him to bear down on it and make sure it is done.

But getting back to waste on the drawing frames. This is a better place for a tender to hide his waste than any other place in the card room. He can let the remnants accumulate in the bottom of his can, and it cannot be found unless his or her empty cans are followed up as they run down or break back at the back of the frames. I have seen as high as half of a tender's cans anywhere from three to eighteen inches deep in remnant bunches of silver. However, as "Wash" states, with good running frames, with all ends pieced up at the cards in good shape and the drawing frames in good repair, there will not be much waste. And, by the way, at the executives meeting to which "Wash" has reference, one of the speakers at the meeting hardly had enough drawing waste to weigh on a two weeks' run. Some of his waste problems and speeds seemed so unusual that two of my overeers wanted to go

and see this problem of his, of low speeds and hardly any waste, so they went. They found it practically as he had stated at this meeting, but he had the advantage of giving his cards and has drawing frames the benefit of the low speeds and was doing wonderful work, the best that they had ever seen, and of course he wins.

T.D.A. (GA.)

Cockled Yarn.

EDITOR COTTON:

The spinning discussion in the May 1927 issue of COTTON, under the heading "Cockled Yarn", is a very interesting subject. As cockled yarn is a source of great annoyance to most of us at times, possibly a few remarks concerning my own opinions and observations will be welcomed by some of the men who follow up the discussion department.

There are two very common causes for cockled yarn; one is a dry roll, and the other, and most annoying cause, is uneven staple. In both these cases the roll is prevented from revolving freely, thereby not reducing the stock to the proper bulk.

If the rolls are well taken care of, of course cockled yarn cannot be made by hard running rolls, but there are times when some of us let these things slide until we are reminded of it quite forcibly. Then we take a little excursion around the job and personally inspect our rolls. We end up by bawling out one or two frame tenders and the second hand, and for quite some time to come the evil is cured. But the second cause, namely, uneven staple, cannot be handled in such a simple though thoroughly effective manner. Things will be running along smoothly, with everybody satisfied, and without warning we get cockled yarn—bobbing up here and there in every corner of the room. All this is caused by a few bales having a small percentage of long fibers mixed in.

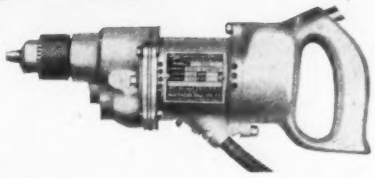
These fibers will be gripped by the front and middle roll *at the same time.* The result is, *the front roll is retarded,* and the stock isn't drawn down to its required bulk. Just as soon as the stock is delivered *past the bite of the front roll,* more twist per inch is inserted than this bulk can take (the twist being right for the normal counts) and the natural result is, the end curls up.

I hope I have succeeded in bringing out my ideas vividly enough so that the action that I am endeavoring to portray can be quite readily visualized.

There is another quite common cause for cockled yarn that some men do not seem to understand as clearly as they might. We are all acquainted more or less with the fact that wide settings tend to produce uneven, and consequently, weak yarns. So from the foregoing statement we infer that close settings make strong even yarns. This is very true, but unfortunately, there are some men who carry things to extremes.

They will staple their cotton and instruct the section men as to just what settings they must use. Things get started up all right and run along fine until the first damp day that happens to hit town upsets the whole shooting match. Then the ends cockle up and run badly all over the room. The trouble is, the settings used are too close for all practical conditions. Theoretically, they may be correct, but the first damp weather upsets everything because the extra moisture in the stock makes it harder to draw out.

Thor ELECTRIC DRILLS



The Reason Why

We've often been asked why THOR Electric Drills give such wonderful service over a long period of years and why the upkeep cost is so astonishingly low. Our answer to this question is that they are designed and built along definite plans and strict specifications. There is only one way to do things at the THOR plant and that is the right way.

We are building the best electric drill we know how to build. It is our belief that whether you buy electric drills for steady service or occasional use, you want them to be dependable and trouble-proof. That we are on the right track is amply evidenced by the growth of our business.

Would you like to test a THOR Drill for 10 days free of charge in your own shop? Just write us—no obligation—no red tape.

TOOLMAKERS SINCE 1893

INDEPENDENT PNEUMATIC TOOL CO.

PNEUMATIC TOOLS — GENERAL OFFICES 600 W. Jackson Blvd. CHICAGO — ELECTRIC TOOLS

FACTORY AURORA, ILL. BRANCHES THE WORLD OVER

Eastern Office 1463 Broadway, New York. London Office 40 Broadway, Westminster, London

SOUTHERN

"Up to a Standard"

NOT

"Down to a Price"

SOUTHERN REEDS and COMBS

Southern Loom-Reed Manufacturing Co.

Manufacturers and General Overhaulers

Greenville, S. C. Campobello, S. C.

SOUTHERN SOUTHERN SOUTHERN

STEEL HEDDLE MFG. CO., 2100 West Allegheny Ave., Phila. Pa.

NEW ENGLAND OFFICE:
44 Franklin St.,
Providence, R. I.

SOUTHERN OFFICE:
Steel Heddle Bldg.,
621-625 E. McBee Ave., Greenville, S. C.

FOREIGN OFFICE:
Hudders Field, Eng.
Shanghai, China

There were two other questions brought up in this article regarding cockled yarn. The first was whether single or double roving cockles most and also, whether weighting on the rolls has anything to do with the amount of cockling that takes place.

There is not the least doubt that double roving causes a great deal more trouble than does single roving. In fact, single roving, as stated by some gentleman, very rarely causes cockled yarn. It is caused quite often in double roving because one end comes in a little heavy in places. The roll is raised slightly by the heavy end, thereby allowing the lighter end to slip through without any drawing action taking place upon it whatever. The result is, of course, that the end cockles.

Referring to the second question: The heavier a frame is weighted, the less cockling will take place, because the fibers are held much more securely by the rolls, and the top rolls get a more effective drive from the bottom rolls.

Reference was made to the yarn twisting up on the spinning frame, in the bite of the rolls, when the frame is stopped. This condition cannot be classed as cockled yarn, as it is simply a kink put in the yarn, as the tension on the end is relieved.

When the frame slowly comes to a stop, if the traveler is closely observed, it will be seen to drop back a slight amount, as the ballooning ceases. The end slackens to a certain extent, and the newly twisted yarn, being quite elastic, naturally will kink up until the extra slack is taken up. The kink is removed just as soon as the frame is again started up.

C.C.(N.J.)

Cleaning Cotton.

EDITOR COTTON:

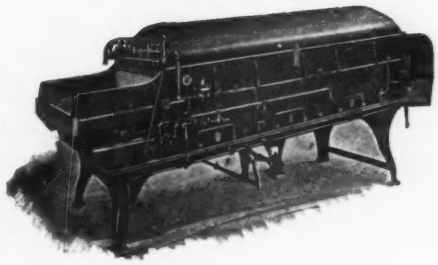
Read the history of cotton manufacturing and you will find that the early cotton opener consisted of a horizontal beater which was changed by the Crighton.

Since my first letter to COTTON, I have always condemned the method of beating the stock against a metal roll. It was Arkwright's mind that created the beater, but Crighton created the proper use for it. So from the year 1785 until the year 1910, the proper picking system lay in the balance, as did the winding-on system.

The argument was that the Crighton opener chewed the stock and injured the fibers. So after all these years I find on the market what is known as a unit, which consists of a bale breaker, with a stop and start apron attached, a vertical opener with a condenser section attached and two horizontal cleaners in tandem with a condenser section attached at the outlet of the second machine.

Whoever devised this unit had in mind that beating the stock against feed rolls and over grid bars injured the stock. So, like a stream of water, the stock flows continuously and opens gradually and quickly, at the same time removing the dirt and foul air. Fresh air is taken in, by the means of fans, which of course follows the flow of cotton.

Each cotton fiber is a single cell with one end closed and the other end attached to the seed. The cell walls have no definite structure and are porous. In the early stages of its growth the cotton fiber is cylindrical, with a central canal extending through it filled with juices, in the ripening process. The cotton boll first opens exposing the fibers



The Sargent Method of Yarn Conditioning Means Greater Production for You in 1928

The installation of a Sargent Yarn Conditioning Machine will mean a great saving in time, labor and storage space and permit the material to be sent to the loom within half an hour after coming from this machine. A maximum of three minutes exposure will set the hardest twist, obviating the possibility of "kinky" filling. One man can operate the Machine, and its automatic action assures absolute uniformity of conditioning. This Sargent advantage is particularly noticeable where piece goods are dyed, by the absence of streaks and cloudiness.

With the Sargent Method of Yarn Conditioning, there is an appreciable saving in steam which alone justifies its purchase. No opening doors to cool the chamber each time a batch of yarn is conditioned—nor are there any boxes to be uselessly heated. Bobbins last longer, as they do not crack or swell. You will find the Sargent Method much quicker and safer than the Sprinkling or Steaming methods that you may now be using.

There are over 400 Sargent Yarn Conditioning Machines in operation—all giving perfect satisfaction. A very interesting Booklet on Yarn Conditioning will be sent you on request.

C. G. SARGENT'S SONS CORPORATION

GRANITEVILLE, MASS.

Builders of Cotton Stock Drying Machines and Continuous Automatic Extractors

Fred H. White Southern Agent, Charlotte, N. C.

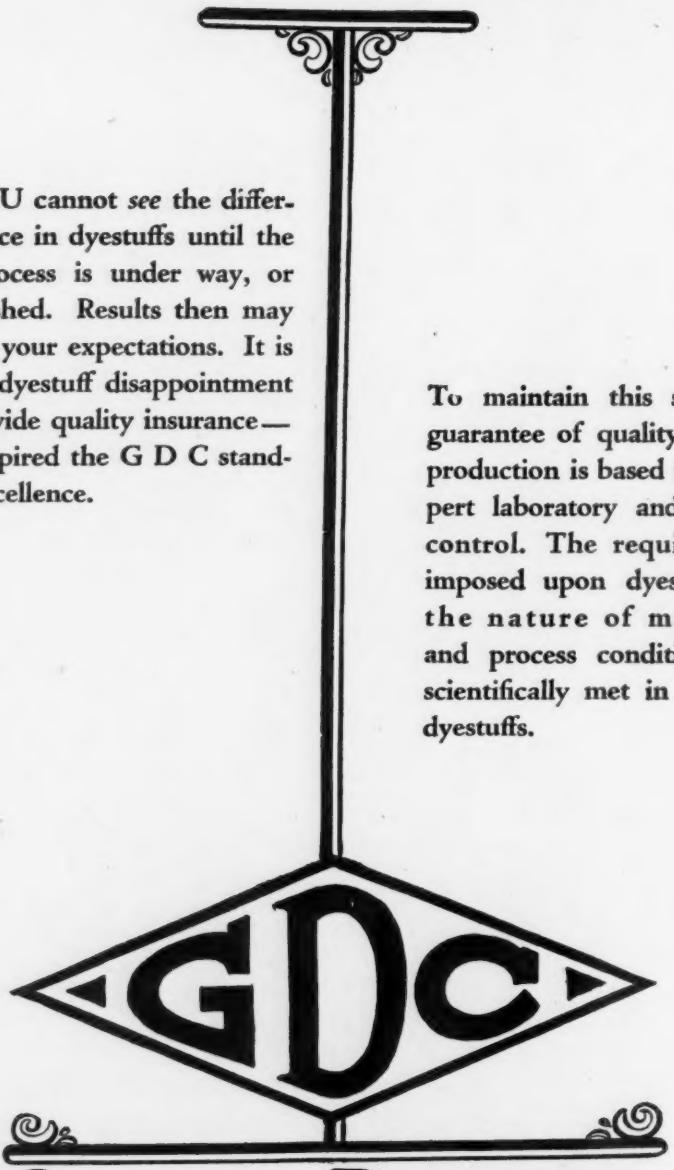
SARGENT

Yarn Conditioning Machine

G D C dyestuffs provide Quality Insurance

YOU cannot *see* the difference in dyestuffs until the process is under way, or even finished. Results then may be below your expectations. It is to avoid dyestuff disappointment —to provide quality insurance— which inspired the G D C standard of excellence.

To maintain this satisfying guarantee of quality G D C production is based upon expert laboratory and factory control. The requirements imposed upon dyestuffs by the nature of materials and process conditions are scientifically met in G D C dyestuffs.



GENERAL DYESTUFF CORPORATION

NEW YORK, 230 Fifth Avenue

BOSTON, MASS. 159 High Street
PHILADELPHIA, PA. 111 Arch Street
PROVIDENCE, R. I. 40 Fountain Street
CHICAGO, ILL. 305 W. Randolph Street
CHARLOTTE, N. C. 220 W. 1st Street
SAN FRANCISCO, CAL. 22 Natoma Street

to light and air, the juices in the canal dry up and deposit themselves unequally in proportion to the amount of exposure, thereby causing an unequal collapse and contraction of the cell walls, resulting in the twisting of each fiber, so characteristically peculiar to cotton.

"Neps" are short fibers mixed in with the others, and to some extent, therefore, their presence cannot be helped, at the same time the percentage of them is often unnecessarily increased by excessive breakage of fiber through bad handling and manipulation under unfavorable atmospheric conditions in the processes of carding and spinning.

From the foregoing statement the following can be deduced: You can have a picking system retaining its foul air which drys the fibers, making a loss unless you get a regain by the use of humidifiers, or, you can have a system that will open well, clean well, bloom and air the stock and thus have it in an ideal condition for other processes. The unit is provided with an evener motion of the Perham and Davis type. As the stock leaves the automatic feed box it passes the action of the evener and the result is an evener lap, not equaled by most finisher pickers in some systems of picking.

A bale of low grade stock was run through one of these units. Eleven per cent of foreign matter was extracted and the lap was placed at the back of the card and a variation of a few grains to the yard was found in the carding sliver. In our mill we have a breaker with finisher pickers, but our carding sliver varies from four to eight grains. The idea is worth investigating. WASH (R. I.)

Winding on Roving Frames.

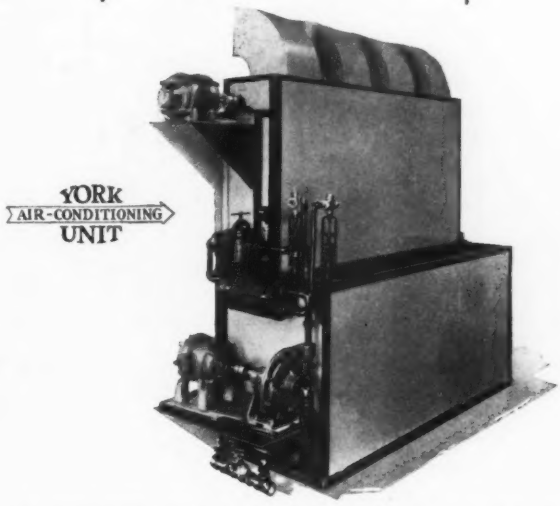
EDITOR COTTON:

There are two or three systems of driving roving frames which have attained some degree of permanence and efficiency. In the cotton spinning industry, the cone and differential gearing has achieved full favor, and in spite of many imperfections a satisfactory bobbin can be made which satisfies the requirements of a spinner, inasmuch as a long length of the twisted roving can be wound on the bobbin, with little difference in tension.

If one unwinds a bobbin, from any of the machines in question, i.e., flyer frames, either in lengths of 30 yards, or in lengths to take the whole of a separate lift, one finds that under suitable conditions, the weight per unit length of one yard, will be pretty regular. This shows that, notwithstanding the many imperfections of a roving frame, the machinists have made a mechanism which, from a practical point of view, gives good results. This does not imply that finality has been reached, nor will be. There is much scope for improvement and to the credit of the industry it can be honestly said that many minds are engaged in essaying to improve the mechanism, so as to bring it in line with theory based on scientific principles. The problem which faces all engaged on these frames is to wind a constant length, delivered per unit of time, upon a suitable receptacle, under constant tension. It will be obvious to the merest tyro, that stretched roving, or slack roving, will cause irregularity in the spun yarn, as there is no means of equalizing the variations. Moreover, owing to the draft in the final spinning machine, these irregularities, however slight, will be distributed over a length which equals the length of the irregular roving multiplied by the draft.

Scientific Air Conditioning *for any department, any size plant, now possible* this less expensive way

1. Humidifies, dehumidifies, warms, cools, *scientifically and accurately.*
2. Easily, quickly installed.
3. Unit System — completely self-contained.
4. No huge air ducts.
5. Flexible System — extended or rearranged without expensive alterations.
6. Lower initial and operating cost.
7. Provides heat, thus eliminating other heating equipment.



DEVELOPMENT of the York Air-Conditioning Unit is of utmost importance to everyone concerned with air-conditioning problems.

Here is a scientific *Unit,* functioning with marvelous accuracy, producing completely conditioned atmosphere, at a fraction of former expense and with new advantages in operation and flexibility never before achieved. Engineers and plant executives who have already seen the York Air-Conditioning Unit call it revolutionary in its effect on air-conditioning problems. Small plants which have gone without conditioning because of expense can now use the new York Unit. Large plants can equip on the Unit basis, department after department, Unit by Unit, without fear of huge losses when plant changes are made.

York representatives in important centers will gladly cooperate with plant owners, engineers and contractors, in solving conditioning problems. There is no obligation involved. Write Dept. C, York Heating & Ventilating Corp'n, 1526 Locust Street, Philadelphia.

YORK

HEATING & VENTILATING CORPORATION
PHILADELPHIA
Engineered Products
Manufacturers of the Famous York Heat-Diffusing Unit

Another difficulty in winding arises from the fact that the yarn has to be wound upon a surface which from the nature of things, must increase in diameter, as the roving must be retained as long as possible on the bobbin while in process, and as the length of winding surface is limited it is imperative to wind upon a surface of increasing diameter.

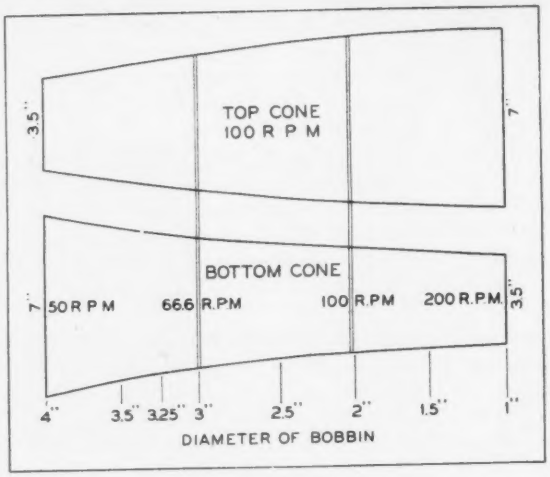
For the purposes of this article let us take the following particulars. It will be found that nearly all cones are designed to give a bobbin varying in the ratio of 1 to 4. This is easily understood by examining the relative diameter of the top and bottom cones at their ends. The diameter of them is reversed. At the commencement of the wind the ratio of top to bottom cone diameter is reversed at the end, making a reciprocal, generally say from 2 to 1 at the beginning and 1 to 2 at the end, which gives the ratio of diameter of bobbin as 4 inches to 1 inch.

There are many methods of describing the calculation of cone outline but the one mentioned here is the simplest for the beginner. For a more detailed description, a text book should be consulted.

It must be understood at the beginning that the cones are entirely responsible for the winding, at a varying rate, of the roving upon the bobbin. Hence it is easy to follow that as the bobbin increases in diameter the speed of the driven cone must be reduced. The top cone speed is constant. To reduce the speed of the bottom cone, the cone outline must be formed so as to vary the speed inversely as the bobbin diameter, and yet insure that the distance is such as to permit a belt of fixed length to keep contact and thus work properly. This means that the sum of the cone diameter must, within very narrow limits, remain constant. The theoretical cone outline is often modified in practice, but only very little. On account of the tendency to slippage at the ends of the cones, due to the small diameter of one cone at least, it may be found that the cone outline is modified here.

The cones under observation were designed for a frame to make a bobbin of from 1 inch to 4 inches in diameter. The top cone is revolving at a speed of 100 r.p.m. It will be unnecessary to state that the top cone diameter is 7 inches and the bottom cone diameter 3.5 inches at the commencement of winding.

The principle of this calculation then, is to find the ratio which exists between the speeds required for the top and bottom cones, and to remember that this ratio must always add up to the sum of the cone diameters, in this case 7 inches + 3.5 inches = 10.5 inches. Let us proceed to work out the speeds and diameters of cones to give winding at four points along the cones. Then we can make a table, and interpolate points, which will give the diameters of cones required to give the speeds for winding at intervals of 1/10 inch of diameter.



Speed of top cone, 100 r.p.m.

Speed of bottom cone, initial position 1 inch diameter, 50 r.p.m.

Diameter of top cone (initial position) 7 inches.

Diameter of bottom cone (initial position) 3.5 inches.

Then the ratio between the two cones $= \frac{100}{1} \times (r) = \frac{200}{1} = \frac{100}{50} = r = 2$ to 1.

The sum of this ratio $2 + 1 = 3$ which must equal 10.5 inches.

Then the ratio of top cone to bottom cone $= 2/3 \times \frac{10.5}{1}$ and $1/3 \times \frac{10.5}{1} = 7$ inches to 3.5 inches.

The bottom cone speed must, for 2 inches diameter, equal ½ of 200 — 100.

$\frac{100}{1} \times (r) = 100\ r = \frac{1}{1} = 1 + 1 = 2 = 10.5$ inches.

At this point both cones are alike and equal 5.25 inches.

For 3 inches diameter the bottom cone speed must equal 1/3 of 200 = 66.6.

$\frac{100}{1} \times (r) = 66.6.$

$\frac{100}{1} \times r = 66.6. \qquad r = \frac{66.6}{100} = \frac{2}{3}.$

$2 + 3 = 5.$ Therefore $\frac{2}{5} \times \frac{10.5}{1} = 4.2$ inches, and

$\frac{3}{5} \times \frac{10.5}{1} = 6.4$ inches.

For 4 inches diameter the bottom cone must equal ¼ of 200 = 50.

Dia. of Bobbin....	4	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1
Regd. speed of bobbin	1/4	1/3.9	1/3.8	1/3.7	1/3.6	1/3.5	1/3.4	1/3.3	1/3/2	1/3.1	1/3	1/2.9	1/2.8	1/2.7	1/2.6	1/2.5	1/2.4	1/2.3	1/2.2	1/2.1	1/2	1/1.9	1/1.8	1/1.7	1/1.6	1/1.5	1/1.4	1/1.3	1/1.2	1/1.1	1/1
Regd. speed of bottom cone	50	51.3	52.6	54	55.5	57.2	58.8	60.6	62.5	64.6	66.6	69	71.4	74.1	77	80	83.4	87	91	95.4	100	105.3	113	117.6	125	133.5	143	154	166.6	182	200
Dia. of Top Cone.	3.5	3.56	3.6	3.68	3.72	3.82	3.87	3.97	4.04	4.13	4.2	4.28	4.37	4.47	4.56	4.67	4.78	4.89	5	5.13	5.25	5.4	5.57	5.67	5.83	6	6.18	6.38	6.57	6.77	7
Dia. of bottom cone	7	6.94	6.9	6.82	6.78	6.68	6.63	6.53	6.46	6.37	6.3	6.22	6.13	6.03	5.94	5.83	5.72	5.61	5.5	5.37	5.25	5.1	4.93	4.83	4.61	4.5	4.32	4.12	3.93	3.73	3.5
Sum of Cones.....	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5

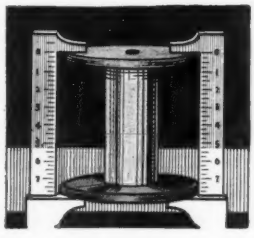
There IS a difference in - FIBRE SPOOLS

Inaccuracy of construction

With this Advantage

LESTERSHIRE Fibre Spools have impressively demonstrated their superiority over wood spools. This success has tended to establish an opinion that all Fibre Spools are on a par as to excellence.

The facts are otherwise, however. Lestershires contrast with other Fibre Spools through the possession of certain exclusive features. Make a comparison yourself. In uniformity and accuracy of construction Lestershires are unapproached. Sound design—is the basis upon which they are made. With this advantage to build upon there has been developed an organization of expert spool craftsmen. Specifications are rigid, and are adhered to.



The result—Lestershire Spools are more accurately made. A fact which is revealed in better spooling and more economical spooling.

LESTERSHIRE FIBRE SPOOLS

Reduce direct labor costs.
Eliminate your spool replacement expense.
Eliminate loss of yarn due to spools (in many mills this loss runs into thousands of dollars).
Eliminate all possibility of injury to employes from rough or slivered spools.
Increase about 10% the yardage on your spools.
Eliminate warper kinks and knots due to spools.
Eliminate broken ends on your warpers due to spools and thus increase warper production 20% to 30%.
Materially improve the quality of your warps; and thus better the quality and increase your production generally.

SATISFACTION GUARANTEED

LESTERSHIRE

TRADE FIBRE SPOOLS MARK

SPOOL & MFG. CO.

146 Baldwin Street
Johnson City, N. Y.

Southern Offices:
519 Johnston Bldg.,
Charlotte, N. C.

Clean!

The steel sealed Dodge-Timken Hanger Bearing was selected by the Unity Cotton Mills as well as by others because a minimum of lubrication is needed and the housings are effectively closed to prevent leakage and consequent injury to goods in process.

Wherever close attention is given to every means for improving quality, production and economy, Dodge-Timken transmission appliances merit careful consideration.

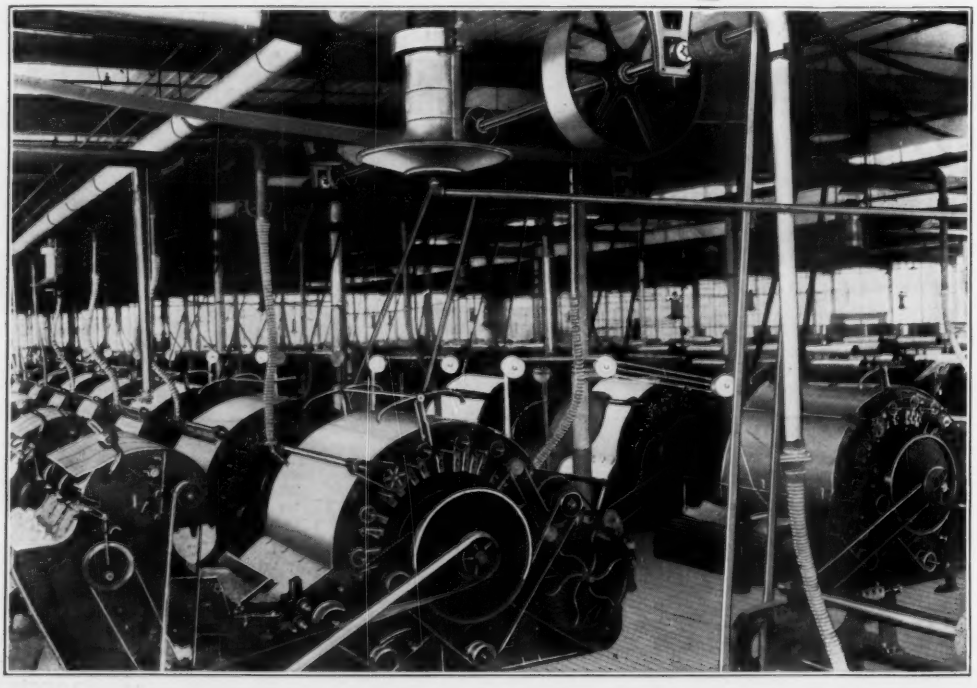
An interesting bulletin can be had for the asking.

DODGE MANUFACTURING CORPORATION

Factories at Mishawaka, Ind., and Oneida, N. Y.
General Offices, Mishawaka, Ind.

Branches: New York, Boston, Newark, Philadelphia, Oneida, Cleveland, Cincinnati, Atlanta, Houston, St. Louis, Minneapolis, San Francisco.

DODGE TIMKEN



$$\frac{100}{1} \times (r) = 50 \qquad r = \frac{50}{100} = \frac{1}{2}.$$

$1 + 2 = 3$. Therefore $\frac{1}{3} \times \frac{10.5}{1} = 3.5$ inches.

$$\frac{2}{3} \times \frac{10.5}{1} = 7 \text{ inches}$$

The table shows the diameters of the cones, for every 1/10 inch increase in the diameter of the bobbins.

Another very easy method of finding the requisite speeds from the cones is to substitute in the following formula:

As the smallest diameter of the bottom cone divided by the largest diameter of top cone is to the empty bobbin, so is any diameter of bottom cone ÷ any diameter of top cone to any diameter of the bobbin.

i.e., take 1.9 inches diameter, $\frac{3.5}{7} : 1 :: X : 1.9$ then,

$$\frac{3.5}{7} \times \frac{1.9}{1} = X.$$

L. E. A. (CHINA).

The Use of Variable Speed in Spinning.

EDITOR COTTON:

Of recent years, the attention of textile mills has been drawn by manufacturers of ring spinning frames, and by makers of electrical apparatus, to the advantages to be derived from the use of variable speed in spinning.

It is well known that with a constant spindle speed, on any ring spinning frame, the tension in the yarn is variable; the amount of tension being determined by the angle made by the yarn between the traveler and the point on the bobbin, on which the yarn is being wound up. When winding up on the bare bobbin the tension is much greater than when winding on the built-up cop.

It follows, then, that the tension is constantly varying. The rate of variation and the number of times the cycle varies, from the highest tension permissible, to a lower tension, depending upon the yarn spun, make of frame, the builder motion, etc.

Variable speed spinning is, as its name indicates, a method of driving ring frames with a suitable motor and control that will increase the speed at a time when the tension is dropping, to a point that will increase the tension at all times to the highest permissible tension.

Varying the speed in this manner has two outstanding results, one is a better quality due to constant tension; the other is it increases production.

It is obvious that if a mill by the use of constant speed ring spinning has been making a grade of yarn that is satisfactory to the trade, that refinements in quality due to variable speed will not increase the value of the yarn per pound, a sufficient amount to warrant the investment necessary to change over from constant to variable speed.

Those seeking to create a demand for variable spinning equipment, have two lines of approach, both based on increased production.

The first line of approach is directed toward the substitution of ring frames for mules (self actors). In this instance, the constant tension obtained with variable speed spinning is used to extend the field of the ring frame into that now occupied by the mule. The latter machine occupies more space than a ring spinning frame, requires more skilled attention, and produces less yarn per spindle per hour on account of the fact that it is not spinning all of the time. It spins when the carriage goes out, and winds up as the carriage is drawn in.

Some textile machinery concerns in this country as well as foreign ones, have on the market ring frames that they claim will displace mules for spinning some sizes of yarn, and a speed adjustment is obtained by shifting belts from a slow to a high speed pulley at the proper time. This belt shifting gives an abrupt change from the slow to the fast speed; but with this crude method of adjusting the tension, the results are good enough to allow the ring-spinner to invade the mule field to a larger extent than would otherwise be the case.

If we substitute for the belt shifting, a motor and control giving a gradual increase and decrease in tension at the proper times, we can probably further increase the field of usefulness of the ring frame, when considered as a competitor of the mule.

The opportunities for using variable speed in this way are limited, and most of the effort used to make a demand for variable speed spinning is directed toward increasing production from ring spinning frames now driven by some constant speed drive; possibly steam, group electric, or individual electric.

Any change in method of operation is justified only if the return on the investment necessary to make the change is sufficiently large. It can be shown that the increase in production by the use of variable speed will be about 10 to 15 per cent depending upon the yarn spun, condition of machines, and local conditions in the mill.

An increase in production is of value to the mill in two ways. It can be considered as a means of producing more yarn in a given time, to meet the demand. This condition would only be of interest if the demand was great, such as it was during the war. The second condition is to consider the increase in production as a means of saving labor and overhead. Power consumption under both constant and variable speed is for all practical purposes the same.

Knowing the cost required to spin one pound of yarn with constant speed, with an increase in production of 10 per cent, provided the labor and overhead charges per hour remain constant, the percentage labor and overhead saving will be 10 per cent per pound of yarn. If, however, the spinner is paid by the pounds of yarn spun; then there will be no labor saving as the increase in production will be matched by a corresponding increase in labor costs. The overhead saving would be too small to be considered as a return on the investment.

There is still another factor bearing on the situation, which is the count of yarn spun. For a coarse yarn the time required to fill a bobbin is short; the hourly labor cost per pound is low, and the saving in agreement. For fine yarns where a long period is necessary to fill a bobbin, the hourly labor cost per pound is proportionately higher.

Each mill, (or group of mills) has its own method of cost accounting, labor and overhead costs vary in different localities, and each mill constitutes a separate problem; but analysis of costs in a number of mills believed to be representatives, show that to have an appreciable return

Can be Attached to *Any* Loom

To give both the weaver and the superintendent the accurate record of the number of picks woven in a given period on a given loom.

It's the modern way to pay.

Send for the text book "Counterology."

The Root Company

202 Beck St. Bristol, Conn.

Southern Office

W. A. Kennedy,
Johnston Bldg., Charlotte, N. C.

A PLANT CANNOT GROW WITHOUT ROOTS

ROOT
PICK COUNTERS

upon the investment necessary to purchase variable speed equipment, the cost of the equipment should not exceed $2.50 per spindle, and then the investment is only justified, if the labor is paid on an hourly basis.

I would be glad to see a discussion of this subject by some of COTTON's readers.

CONTRIBUTOR No. 3031.

Double and Single Roving in Drafting.

EDITOR COTTON:

In a previous letter I described what I consider is the best method for figuring the doublings and drafts for 30s carded yarns using double roving. It may be well at this time to consider a problem in drafting, using both a double and a single roving at spinning. It will serve to clearly illustrate the variation at the different processes in the weights and drafts necessary in the production of a yarn using the same card lap and producing the same counts from the spinning frame.

As an example, what weights and drafts will be required to produce a 20s carded yarn, using double roving at the spinning, from a 13 ounce lap allowing 5 per cent waste at the card, using three processes of drawing, doubling six ends on each process and three processes of roving, doubling two ends on intermediate, two ends on the roving frame and two ends at spinning?

$$\frac{7000 \times 13}{16} = 5687 \text{ grain lap.}$$

$$\frac{8.333}{5687} = .00146 \text{ hank lap.}$$

$$\frac{20 \times 6 \times 6 \times 6 \times 2 \times 2 \times 2 \times .95}{.00146} = 22{,}487{,}671 \text{ total draft required.}$$

$100 \times 6 \times 6 \times 6 \times 4 \times 5 \times 6 \times 10 = 25{,}920{,}000$ trial draft.

$$\frac{25{,}920{,}000}{22{,}487{,}671} = 1.152 \text{ decrease of draft required.}$$

A decrease will be made on the slubber draft from 4 to 3.75. $\frac{1.152 \times 3.75}{4} = 1.08$ decrease still required.

A decrease will also be necessary on the intermediate, to balance the slight remaining difference.

$5 \div 1.08 = 4.63$ draft to use on the intermediate.

$$\frac{5687 \times .95}{100} = 54 \text{ grain sliver from the card.}$$

$$\frac{54 \times 6}{6} = 54 \text{ grain sliver from 1st, 2nd, and 3rd drawing.}$$

At this point it is necessary to reduce the grain sliver to hank sliver.

$$\frac{8.333}{54} = .154 \text{ hank sliver from the drawing.}$$

$.154 \times 3.75 = .577$ hank from the slubber.

$$\frac{.577 \times 4.63}{2} = 1.33 \text{ hank from the intermediate.}$$

$$\frac{1.33 \times 6}{2} = 3.99 \text{ hank from the roving frame.}$$

Canvas baskets, trucks, and hampers designed for the textile industry

Valley Mills has produced a complete line of canvas containers for the especial requirements of the textile industry. Included are baskets for general conveying or storing of materials, special doff trucks and doff baskets, special steaming baskets with brass eyelets for use in the conditioning room, special roving trucks for the handling of the heavier spools and bobbins from the roving frames.

All are remarkably well constructed for lightness and strength. All are covered with No. 1 Triumph Duck made by Callaway Mills, associated with Valley Mills. Accessories, such as casters, handles, hinges, and eyelets are of high quality and are installed to give lasting and satisfying service.

Dimensions and prices will be furnished at your request either by us or our representatives. If unusual sizes or shapes are desired Valley Mills can meet your specifications with economy and promptness.

VALLEY MILLS

LA GRANGE, GEORGIA

ALL STEEL
ECONOMY
FIRE PROOF
BALING PRESSES
ALL SIZES FOR ALL PURPOSES
LARGEST LINE BUILT IN U.S.A.
ECONOMY BALER CO., DEPT. C, ANN ARBOR, MICH., U.S.A.

MI CLEANSER
Textile Floor Scrubbing Powder

BUILT OF THE BEST MATERIALS AND DESIGNED ESPECIALLY FOR MILL FLOORS, MI CLEANSER OFFERS THE IDEAL COMBINATION OF CLEANLINESS AND SAFETY AT MINIMUM COST.

Mfg. and sold by
THE DENISON MFG. CO.
ASHEVILLE, N. C.
YOUR ORDER IS SHIPPED THE DAY IT REACHES US

GARLAND

Another Reason why You Should Buy *GARLAND* LOOM HARNESSES

Our loom harnesses are critically inspected not only during process of manufacturing, but also when ready to ship, when any harness, which is not up to the high standard we require is thrown out. Every harness which you receive from us is therefore as near perfect as it is possible to make it, and the quality is always the same.

G
TRADE MARK

GARLAND MFG. CO.
SACO, MAINE

Bradley Stencil Machine

The Bradley Stencil Machine makes Stencils in half a minute at reduced cost of 1-10c each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

Oil Paper, Stencil Paper and Inks. Bradley Ball Stencil Pot uses Liquid Ink for marking and stenciling. Price 60c or $6.00 per doz. Manufacturers of Oil Stencil Papers.

Write for Prices and Samples
A. J. BRADLEY MFG. CO.
99 Beekman Street NEW YORK

Tax Returns and Your Cost System—

No matter how successful a mill man may be, nor how accurate his judgment regarding fabric values, the Federal Tax agents insist upon tangible evidence to support inventory valuations of stock in process and finished goods.

In this matter alone, the value of an accurate cost system, in simple, convenient form, will often fully justify the installation expense.

Send for copy of "Losses in Textile Plants"

RALPH E. LOPER & CO.
Industrial Engineers
SPECIALISTS IN TEXTILE COST METHODS
FALL RIVER, MASS. GREENVILLE, S. C.

$$\frac{3.99 \times 10}{2} = 19.95\text{s counts from the spinning.}$$

The next procedure will be to follow the same routine, bearing in mind that single roving is to be creeled at the spinning frame.

$$\frac{7000 \times 13}{16} = 5687 \text{ grain lap at the card.}$$

$$\frac{8.333}{.5687} = .00146 \text{ hank lap at the card.}$$

$$\frac{20 \times 6 \times 6 \times 6 \times 2 \times 2 \times 1 \times .95}{.00146} = 11{,}243{,}835 \text{ total draft required.}$$

It will be noted here that the total draft required is just exactly half of that required for the same counts using double roving at the spinning. This gives us a very good opportunity for short drafts on single roving, which is beneficial to the work. Due to the fact that short drafts can be used, very good yarns, almost equal to double roving yarns, can be produced from single creeling at the spinning, if the drafts and weights at the various processes are given proper consideration. These shorter drafts compensate to a large extent for the loss of the doublings in the single creeled yarns.

$100 \times 6 \times 6 \times 6 \times 3 \times 4 \times 5 \times 8 = 10{,}368{,}000$ trial draft.

$$\frac{11{,}243{,}385}{10{,}368{,}000} = 1.08 \text{ increase of draft required.}$$

The increase of draft required could in this case be put on the roving frame to the best advantage.

$1.08 \times 5 = 5.40$ draft to be used on the roving frame.

$$\frac{5687 \times .95}{100} = 54 \text{ grain sliver from the card.}$$

$$\frac{54 \times 6}{6} = 54 \text{ grain sliver from 1st, 2nd, and 3rd drawing.}$$

$$\frac{8.333}{54} = .154 \text{ hank sliver from the drawing.}$$

$.154 \times 3 = .462$ hank from the slubber.

$$\frac{.462 \times 4}{2} = .924 \text{ hank from the intermediate.}$$

$$\frac{.924 \times 5.4}{2} = 2.494 \text{ hank from the roving frame.}$$

$2.494 \times 8 = 19.952$s counts from the spinning.

The foregoing calculations are based upon the assumption that a good quality of carded yarn is sought. Where strength and evenness are unimportant factors a lesser number of processes could be used. Following is a lay-out to suit such circumstances.

What weights and drafts will be required to produce a 20s carded yarn from a 14 ounce lap, allowing 5 per cent waste at the card, using two processes of drawing, doubling 6 ends at each process, and two processes of roving, doubling two ends on the roving frame, using single roving at the spinning?

$$\frac{7000 \times 14}{16} = 6125 \text{ grain lap.}$$

$$\frac{8.333}{6125} = .00136 \text{ hank lap.}$$

Better Lubrication at *Less Cost* per month

Steady Worker Wins Recognition

TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE

NON-FLUID OIL

MODERN TEXTILE LUBRICANT

Used in most mills throughout the country.

It has always lubricated steadily because it has always stayed *in* bearings and off goods.

Our exclusive process makes NON-FLUID OIL remarkably adhesive while retaining perfect lubricating quality.

Send for testing sample and bulletin, "Lubrication of Textile Machinery."

Lewis W. Thomason, Charlotte, N. C., Southern Agent.

NEW YORK & NEW JERSEY LUBRICANT CO.
MAIN OFFICE: *292 MADISON AVENUE, NEW YORK, N.Y.*
Warehouses:
CHICAGO, ILL. PROVIDENCE, R.I. ATLANTA, GA.
ST. LOUIS, MO. PHILADELPHIA, PA. CHARLOTTE, N.C.
NEW ORLEANS, LA. PITTSBURGH, PA. GREENVILLE, S.C.

Leadership!
Leadership in any line places a direct responsibility upon those who maintain this position. Integrity, strict adherence to highest standards of both merchandising and manufacturing have always characterized the leadership of this company in the Spinning Tape field.
BARBER MANUFACTURING CO.
Charlotte, N. C.
World leaders in the production of spinning and twisting tapes of all kinds of cotton machinery.
BARBER
SPINNING & TWISTING TAPES

LEGION FIELD— *Birmingham's magnificent municipal stadium!*

In no type of construction is *enduring concrete* so essential as in a mammoth open air stadium—constantly exposed, subjected to terrific loads and vibrations. The contractors got it with

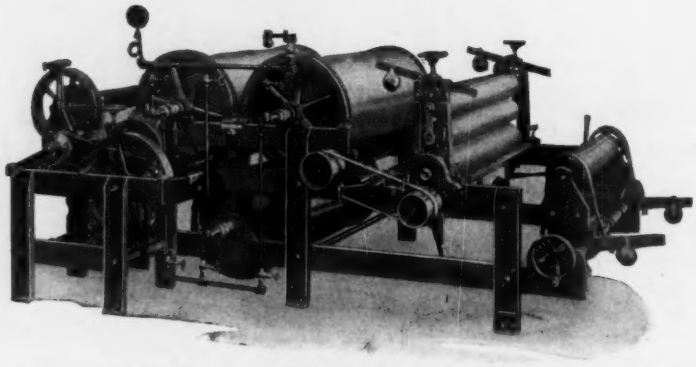
ENSLEY & ALA CITY BASIC SLAG

Ultimate seating capacity 98,000; D. L. Whilldin (B'ham) architect; Foster-Creighton Co. (Nashville) contractors. Photo by 106th Photo-Section 31st Div. Air Corps, Roberts Field, Bham.

using, in this case, a 1:1½:3 mix. Incidentally, the south's finest stadium set a record for low construction cost—about $7 per seat lower than for any other large stadium built since the war.

BIRMINGHAM SLAG CO.
Slag Headquarters for the South
ATLANTA BIRMINGHAM JACKSONVILLE
THOMASVILLE MONTGOMERY OCALA FLA

THE JOHNSON WARP-SIZING MACHINE



Patented Warp-Sizing Machine Number 81

Successfully used and recommended by leading yarn producing plants and Rayon and Celanese Fabric manufacturers in the United States and foreign countries

SEND FOR DESCRIPTIVE CIRCULAR

CHARLES B. JOHNSON ∴ 10 Ramapo Ave. ∴ Paterson, N. J.

British Representative
TEXTILE ACCESSORIES LIMITED
Manchester, England

Southern Representative
G. G. SLAUGHTER
Charlotte, N. C., U. S. A.

$$\frac{20 \times 6 \times 6 \times 2 \times .95}{.00136} = 1{,}005{,}882 \text{ total draft required.}$$

$100 \times 6 \times 7 \times 5 \times 6 \times 8 = 1{,}008{,}000$ trial draft.

$$\frac{1{,}008{,}000}{1{,}005{,}882} = 1.002 \text{ decrease required.}$$

This decrease can best be put on the second drawing.

$$\frac{7}{1.002} = 6.986 \text{ draft to use on the 2nd drawing.}$$

$$\frac{6125 \times .95}{100} = 58.18 \text{ grain sliver from the card.}$$

$$\frac{58.18 \times 6}{6} = 58.18 \text{ grain sliver from the 1st drawing.}$$

$$\frac{58.18 \times 6}{6.986} = 50 \text{ grain sliver from the 2nd drawing.}$$

$$\frac{8.333}{50} = .167 \text{ hank sliver from the 2nd drawing.}$$

$.167 \times 5 = .835$ hank from the slubber.

$$\frac{.835 \times 6}{2} = 2.505 \text{ hank from the intermediate.}$$

$2.50 \times 8 = 20.00$s counts from the spinning.

C. C. (MASS.)

Preventing Plucking on Stiff Finish Goods.

EDITOR COTTON:

I note the finishing problems of "Contributor No. 3016" in the December issue of COTTON. He is producing stay finishes on a 38½-inch, 8.20-yard, and a 40-inch, 5.50-yard sheeting, gray. He said he is bothered with plucking on cans and cloth, and says he has this trouble with the following formula: a 150 gallon mix, with 150 pounds of corn starch, 2 cans clay, 8 cans lime, 3 pounds paraffin wax (scale), and 3 pounds borax. He also gives a formula of 150 pounds of corn starch, 150 pounds potato starch, 3 cans China clay and 10 cans lime, which he said is used in order to prevent plucking, the finishes being obtained on a starch mangle consisting of two maple rolls, directly into the tenter frame, not touching the drying cans in front of the frame. He wants to get the finish on a starch mangle with a brass bottom roll and a hard rubber top roll going directly onto drying cans in range form.

In the first place, I will say that this man has a very mean job in attempting to prevent plucking by running goods of this kind onto dry cans. This is because he uses so much starch in order to get the stiffness that I am afraid it will be rather difficult to entirely eliminate his trouble.

I notice that in the mixing with which he has plucking, he is using paraffin wax and borax. I do not know for what purpose this is, unless he thinks that possibly they might prevent the plucking. Frankly, I do not believe they would help that particular trouble.

Neither do I see why the brass bottom roll with rubber top roll would not give just as good results as the two maple rolls. Of course, with the maple rolls he was running the goods directly onto the frame which would be, in my opinion, the ideal way of handling this kind of fabric. Apparently, though, with his present rigging he cannot run it directly onto the frame and must put the goods over his dry cans.

I have only three suggestions to make. First, that he should be sure that his starch is thoroughly cooked before

Bulletin of Results

WASHBURN WOOD TOP ROLLS

—for—

SPINNING FRAMES

Number Yarn	23's
Twist Square	3.00
Turns per inch	14.40
Staple	1½"
Kind	Combed Sak
Hank Roving used	1.40 Single
Draft	16.40
R.P.M. Spindle	9300
R.P.M. Front Roll	205
Weight Top Roll	1100 grs.
Average Size	23.29
Average Break	126 lbs.

The above is a record of a test recently made using roving taken at random from a large Tire Fabric mill.

WASHBURN

IF IT'S ROLLS, WE MAKE THEM

224-234 No. Water St., New Bedford, Mass.

Winding, Warping and Special Machinery for Rayon

Steel frame construction and patented rigid traverse motion.

Write for circular No. 10

Type BO. Skein Winder for Rayon, Silk and Mercerized Yarn.

THE SIPP MACHINE COMPANY

PATERSON, N. J.

Southern Representative:
GIBBONS G. SLAUGHTER, Johnston Bldg., Charlotte, N. C.

applying it. Secondly, that he squeeze the goods as much as he possibly can in starching them so as to leave as little excess starch as possible on the goods, and thirdly, he might find that he would receive some benefit by lapping the first five or six cans in his set. I believe the lapping might show him better results than either of the other suggestions.

This contributor also reports difficulty with wrinkling on the Tommy Dodd, running a 2.25 -and 2.75-yard drill. He says the Tommy Dodd has a rubber roll of medium density and a doctor blade that is stationary, the cloth being run directly onto cans from the back-filler. The material wrinkles on the Tommy Dodd roll before going under the doctor blade, causing skips and creases. He wanted to know whether this should be attributed to the density of the rubber roll, the doctor blade not oscillating, or the goods being run in range.

He does not state, but I assume he has no scrimp bar on his machine. If such is the case, I should say by passing the goods over the scrimp bar before allowing them to go onto the Tommy Dodd roll, he should entirely eliminate his trouble. Of course, it is always necessary to have some little tension on the goods in going into the machine, but it should not be necessary to have excessive tension. I think all the Tommy Dodds that I have ever seen have had scrimp bars on them, and I should think that by the installation of one his trouble should be overcome.

I would be glad to know whether these suggestions help this man, and how he comes out with his problems.

CONTRIBUTOR No. 2160.

Cracked Selvages.

EDITOR COTTON:

This is in answer to the question published on page 39 of the November number of COTTON asking for the cause of cracked selvages in the cloth made of 30s and 33s carded warp with the following wet twisted selvage: 16 2-ply ends of the warp on each side, having 12 turns to the inch. I will say for the benefit of the readers that I had an opportunity of examining a sample of the goods referred to, and will endeavor, for their benefit, to point out my suggestions as to remedying this more or less common difficulty in sheeting mills.

The inquirer asked whether the use of a dry twisted selvage instead of a wet twisted would tend to reduce this cracking. While it is my opinion that the twisting of both threads dry would be very helpful in relation to this condition, I cannot help but feel that the temple of the loom plays quite an important part in the matter under question. Inside of the temple there is a small wooden roller, and into this roller are driven pins spirally or in the shape of a screw having pins in the place of threads. These little rolls revolve with the goods, and the tendency is for the goods to screw up on the roll, or in other words, they are traveling to the right and to the left in the direction of the two sides of the loom, thus widening the goods from selvage to selvage. It is just possible that with one thread of the selvage twisted wet and the other one twisted dry that the thread which has been wet has a greater draw than the dry one, and this being a tender point may very easily split in leaving the temple. On the other hand, it is just barely possible that some of these pins have been bruised or burred on top or at the point, and this would cause considerable damage.

It is worthy of note, in connection with the sample which I examined, that these damages are in no way regular, and it is for this reason that I would feel that a combination of the twisting and the setting of these temples too wide apart at the loom could, with the fact that some of the pins may be damaged, have a tendency to cause the trouble shown. Looking at the effect under a glass, it does not have the appearance of a sharp cut, but has more the appearance of something into which a hook has been slipped and then forcibly pulled out, thus making a long, jagged bruise.

CONTRIBUTOR No. 965.

Roll Settings for 20s Warp Yarn.

EDITOR COTTON:

After thinking over the problem of "C. E. B. (N. C.)" who asks for roller settings for making 20s warp yarn, there were many things I wanted to know, but since that would delay matters further, I thought it best to offer whatever suggestions should come to my mind and go further into it later if necessary. As you know, it is a hard matter, at the best, to tell a man what to do to overcome a problem when not being absolutely familiar with every condition concerning it; however, I would like to offer a few suggestions that may or may not be of material value to this mill.

To put first things first, I would recommend the following roll settings, when used for full inch cotton. These settings are from center to center of the rolls.

Draw Frame:

Back roll to third roll	1⅝ inch
Third roll to second roll	1½ inch
Second roll to front roll	1⅜ inch

Slubber:

Back roll to middle roll	1½ inch
Middle roll to front roll	1¼ inch

Intermediate:

Same settings as slubber.

Spinning:

Back roll to middle roll	1¼ inch
Middle roll to front roll	1 1/16 inch

Since "C. E. B." is running only a single line of drawing, I would recommend that the front roller speed not exceed 200 r.p.m.

I would suggest that to card more than 130 or 135 pounds per card in ten hours would cause a weaker yarn, and that with a 13-ounce lap, a setting of .017 to .019 of the feed plate to the licker-in is very good, where strength of yarn is required.

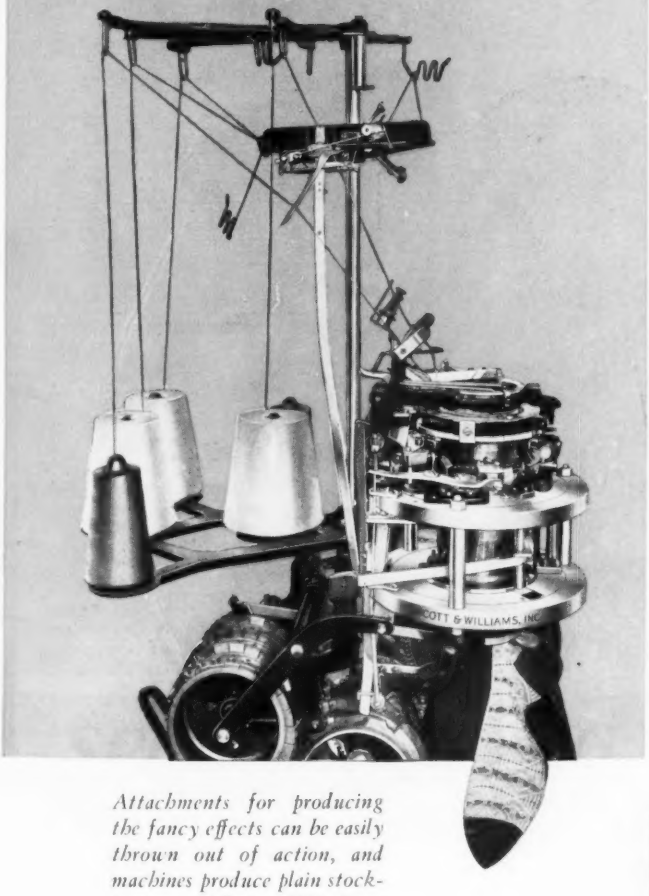
My last suggestion is to my mind the most important. I understand that "C. E. B." has a condition in his mill of 6.5 per cent moisture, which is about 51 per cent relative humidity, and personally, I do not wonder that his yarns are not breaking up to standard. If I misunderstood these conditions, please disregard my remarks. For "C. E. B.'s" information, it has been found that with each 1 per cent increase in moisture added, there is a subsequent 7 per cent increase in breaking strength. Therefore, should his moisture be increased to 8.5 per cent, he should get a 14 per cent increase in breaking strength, or in his case, about 93½ pounds.

A. R. (ALA.)

Knitting Section

SPIRAL FLOATING STRIPING MACHINE

Built into Models HH,K,B

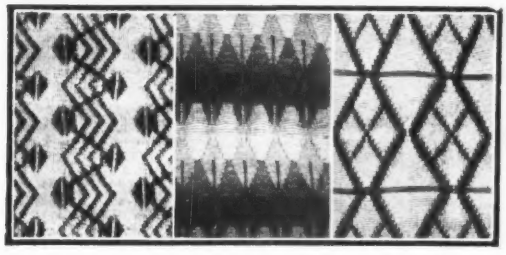


Attachments for producing the fancy effects can be easily thrown out of action, and machines produce plain stockings, as with any HH, K or B machine.

Fancy effects produced by the well known floating pattern system

THIS new machine represents the highest type of equipment for obtaining fancy effects. The horizontal striping mechanism can be arranged to control either the facing yarn or the backing yarn. Two-color stockings can be knit with plain sole and high heel.

This machine can be equipped with as many as six yarn changing fingers, which give a range of five different colors under control of the pattern mechanism exclusive of heel and toe colors.



Established 1865

SCOTT & WILLIAMS

Incorporated

366 Broadway New York, N. Y.

RAYON
Must be given a Fine Finish

RAYON appeals to the taste for beauty and daintiness. Fine finish therefore is essential to success. Exquisite seaming and stitching are secured by users of Willcox & Gibbs Machines. Operations performed on these machines are noted for attractiveness and strength. Willcox & Gibbs Machines thus assure the ultimate in the finish of Rayon products. Every department of seaming and stitching may be performed... Willcox & Gibbs have developed a superb machine suitable for each Rayon finishing operation.

1. *Shoulder Straps Attached*
   Lockstitch Machine
   Type 10
2. *Seams and Lace Joining*
   Flatlock Machine
   Type 300

Sole American Agents for Cornely Embroidery Machines

You are invited to send for a free copy of "Getting the most out of Rayon."

WILLCOX & GIBBS SEWING MACHINE CO.

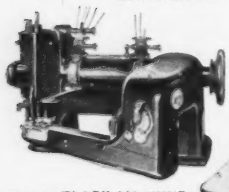
Home Office: 658 BROADWAY, NEW YORK, N. Y.

Boston, Mass. 111 Summer St. · Chicago, Ill. 506 S. Wells St. · Cincinnati, Ohio 206 West 7th St. · Cleveland, Ohio 328 The Arcade · Los Angeles, Cal. 928 Maple Ave. · Minneapolis, Minn. 118 South 8th St.
Philadelphia, Pa. 131 South 12th St. · San Francisco, Cal. 504 Sutter St. · St. Louis, Mo. 1019 Locust St. · Troy, N. Y. Fulton and 4th Sts. · Washington, D. C. 702 10th St., N. W.

Canadian Representative: W. J. WESTAWAY CO., Ltd., Hamilton and Montreal

J. M. De La PENA, Balderas 130-A, Mexico, D. F.
JOHN C. LONG & CO. Rua Candelaria No. 81, Rio de Janeiro, Brazil
LOS FABRICANTES UNIDOS, Inc. 964-972 Calle Belgrano, Buenos Aires, Rep. Argentina
PARRISH ELLIS & CO. Apartado No. 36, Caracas, Venezuela
PARRISH & CO. Apartado No. 6, Barranquilla, Colombia
WILLCOX & GIBBS SEWING MACHINE CO., LTD. 20 Fore Street, London, E. C. 2., England

Baltimore, Md. 221 N. Howard St.

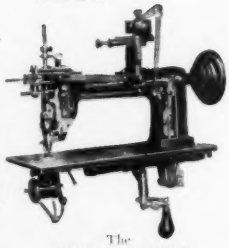


The FLATLOCK MACHINE

OVERLOCK SEAMING and HEMMING MACHINE

The LOCKSTITCH MACHINE

Newark, N. J. 13 Halsey St.



The CORNELY MACHINE

Nottingham · Leicester · Birmingham · Luton · Manchester · Leeds · Glasgow · Belfast · Paris · Brussels · Milan

Write our Home Office for samples of stitches on Rayon, or submit your own fabric for sample purposes.

Construction of Full-Fashioned Hosiery

Avoid Many Style Changes as This Causes Loss in Production. Standardize All Styles Used As Far As Possible

BY C. H. BAXTER.

In recent years, one of the many things discussed among hosiery manufacturers has been the possibility of making all full-fashioned hosiery of standard construction. No real action, however, has ever been taken along such lines and the result is that full-fashioned hosiery construction is one of individual ideas only.

This article is not written with the idea of trying to establish a standard, or that the construction the writer will outline is perfect, but is written for the purpose of giving manufacturers, who are interested in full-fashioned hosiery manufacturing, my ideas of construction, with but one thought and that is that it may be helpful to them in many ways.

In these days of keen competition, the men in charge of hosiery construction of any full-fashioned plant in most cases receive their instructions from the sales organization as to the style of hosiery wanted, including the strands of silk to be used, and the most important instruction received is the price that the style will be sold for.

Knowing the price is very important as from this information, one must study and figure the construction, so that the style can be manufactured at a profit. The price, of course, will determine as to whether the style will be constructed on a quality basis or whether it will be constructed along the lines of so-called "price merchandise."

Full-fashioned silk hosiery, as manufactured to-day, can really be sorted into three classes, namely: chiffons, medium weight and heavy weight.

In the chiffon class, four or five strands of silk are generally used. In the medium weight class, seven or eight strands of silk are generally used. In the heavy weight class, ten or eleven strands of silk are generally used. While there is hosiery on the market, at all times, made from three, six, nine or twelve strands of silk, the percentage of such hose is small in comparison to the production of four, five, seven, eight, ten and eleven strand hosiery made to-day.

In outlining my ideas of construction, I shall use only the three classes mentioned, and shall use the three principal gauges that are in use to-day, namely, 39-gauge, 42-gauge and 45-gauge machines.

To begin with, let us take the chiffon class. We will say that the sales organization desires a four strand chiffon to be made of the best quality possible. In making such a style number, so as to make it a quality product, it should be considered as an all silk number. This number is to be made on a 42-gauge machine and before going any further I might say that I believe, and my experience has taught me, that a 42-gauge machine is the heaviest gauge that should ever be used for making a four strand style number. The standard width of each needle bar on the modern full-fashioned legging machine is fourteen inches wide. As there are 28 needles per inch in a 42-gauge machine, the total number of needles in each needle bar would be 392 needles.

In making a four strand stocking on a 42-gauge machine, the full 392 needles should be used if one wants a very elastic top. It is also well to use a heavier strand silk for the welt, preferably eight strands, as it will give the wearer better service because the welt is stronger and will not break out so easily when the garter is attached.

The leg of the stocking will be four thread and this is the place where one must establish a standard and by this I mean that one must determine the number of courses per inch that will be put into the leg of the stocking. To secure a real fine fabric I find that 52 courses per inch is necessary when knitting in the gum state. In this style or any other style, one must watch out not to make the leg too tight, otherwise they will break out when transferring to knit on the foot.

The number of narrowings to be placed into the stocking is another thing that must be studied; as too many narrowings will make the hose too tight and not enough narrowings will make the hose too loose when put on by the wearer.

To make the welt elastic using eight strand silk, knit 40 courses per inch in the welt.

As to the number of narrowings in the leg, place six narrowings after the welt about 20 courses apart. In the leg, place 27 narrowings, 8 courses apart. In the heel, place eleven narrowings, and have the first five narrowings, 4 courses apart and the next six narrowings, 2 courses apart.

The width of the instep is one place where most manufacturers differ as to the number of needles the instep should be, but I find that if a dainty heel is wanted a 128 needle instep will give a heel that is not too broad.

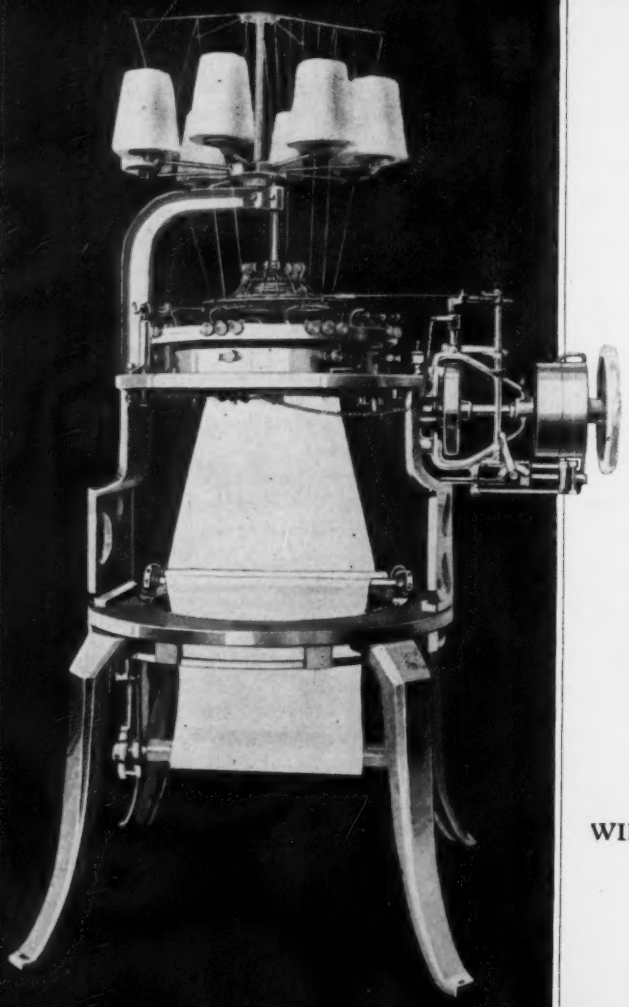
The splicing and heel of the leg should be plaited with 100s/2 cotton and the splicing should be made two and one quarter inches long.

The heel should be made two and three quarters inches long from the beginning of the heel to the loose course in the heel.

Do not use a cotton heavier than 100s/2 in the heel of a four strand stocking, because if a heavier size cotton is used difficulty will be had with plaiting so that the cotton will show on the outside of the heel and when dyed will make a streaky appearance.

Before giving the footing construction of a four strand style number, let me say that all the footing machines should be set standard and that on all styles, regardless of weight, the same width needle bar can be used. My experience has shown me that 248 needles is the proper width for a 39-gauge footer, 260 needles for a 42-gauge footer and 280 needles for a 45-gauge footer.

In footing a four strand style number, the sole should be plaited with 100s/2 cotton and in the toe, if a re-inforcement is used, the toe can be made with 8 to 12 strands of silk and plaited with 100s/2 cotton. On the 42-gauge footer, the instep should also be 128 needles and the sole



If at first you
don't succeed—

Wildmanize

WILDMAN
THE WORLD'S STANDARD

WILDMAN MANUFACTURING CO.
Norristown, Pa.

We have issued a new edition of the complete and informative book, "The Science of Knitting." Price $2.00.

WILDMAN
SPRING NEEDLE BODY MACHINE

on each side should be 66 needles.

The number of narrowings in the gusset of the foot should be 8 narrowings and the number of narrowings in the toe should be 40 narrowings.

This construction as outlined, will make a fine quality stocking and very little improvement can be made on a stocking of this kind and weight.

If this style is to be constructed on a 45-gauge machine, the stocking should be knit 42 courses per inch in the welt and 54 courses per inch in the leg. Add three more narrowings in the leg so that there will be six narrowings in the top and thirty narrowings in the leg. The instep should be made 132 needles instead of 128 needles.

If a four strand silk style number is to be constructed so that it can be sold for a lower price, the following changes can be made.

Cotton can be used in the back of the welt, using either a 60s/2 or 70s/2 cotton.

An all cotton welt can be made. Make leg 48 courses per inch instead of 52 courses.

Make stocking on a 13½ inch needle bar instead of a 14 inch needle bar. When doing this, place 4 narrowings in the top after the welt instead of 6 narrowings.

A cotton heel, sole and toe, using either 2 ends of 90s/2 or 100s/2 in the heel, one end of 70s/2 in the sole and two ends of either 90s/2 or 100s/2 in the toe.

In making a five strand silk hose, the same construction can be used as when making a four strand hose. The number of courses per inch in the leg must be less. For quality hosiery, 50 courses per inch for a 42-gauge, 52 courses per inch for a 45-gauge, should be knit. When making a cotton back welt on a five strand number, use either 80s/2 or 90s/2 cotton. The number of courses per inch in the cotton back of the welt should be 36 courses and for the silk in the welt, it should be 42 courses. When making cotton back welts, do not knit too loosely, as loose welts curl after they are dyed and make a very unsightly appearance.

Now let us take the medium weight class of hosiery, using a 39-gauge machine. In making medium or heavy weight hosiery, it is not necessary to use the full width of a fourteen inch needle bar as a thirteen and one-half inch needle bar width is sufficient. The reason for this is that the stitch in these weights of hosiery is larger and therefore the stocking is more elastic than a chiffon hose.

For example, let us construct an eight strand all silk hose, made with a cotton back welt, plaited heel, sole and toe. In the welt, use either 50s/2 or 60s/2 cotton, making 32 courses per inch. In silk in the welt, knit 40 courses per inch. In the leg, knit 48 courses per inch. The splicing should be two inches long and plaited with 80s/2 cotton. The heel should be two and three quarters inches long and also plaited with 80s/2 cotton. The sole of the foot is plaited with 80s/2 cotton and the toe can be re-inforced by plaiting with either 50s/2 or 60s/2 cotton. The instep on this style number, made on a 39-gauge machine, should be 120 needles. Place three narrowings in the leg after the welt and twenty-six narrowings in the leg. The number of heel narrowings should be eleven or in fact all styles made should have the same number of narrowings in the heel.

If this style is made on a 42-gauge machine, the courses in the welt and leg should be the same as when made on a 39-gauge machine. The reason for this is that giving the construction of a 39-gauge machine, I have tried to make it appear as near to a 42-gauge construction as possible, as the general tendencies are for hosiery made on a 42-gauge or finer. The only change that should be made is to put two more narrowings in the leg when made on a 42-gauge machine and make the instep either 124 needles or 128 needles.

When made on a 45-gauge machine, the cotton in the welt should be no heavier than 60s/2 and knit 36 courses per inch. The silk in the welt should be knit 42 courses per inch and the leg should be knit 50 courses per inch. The number of narrowings in the top should be four narrowings and the number of narrowings in the leg should be thirty narrowings.

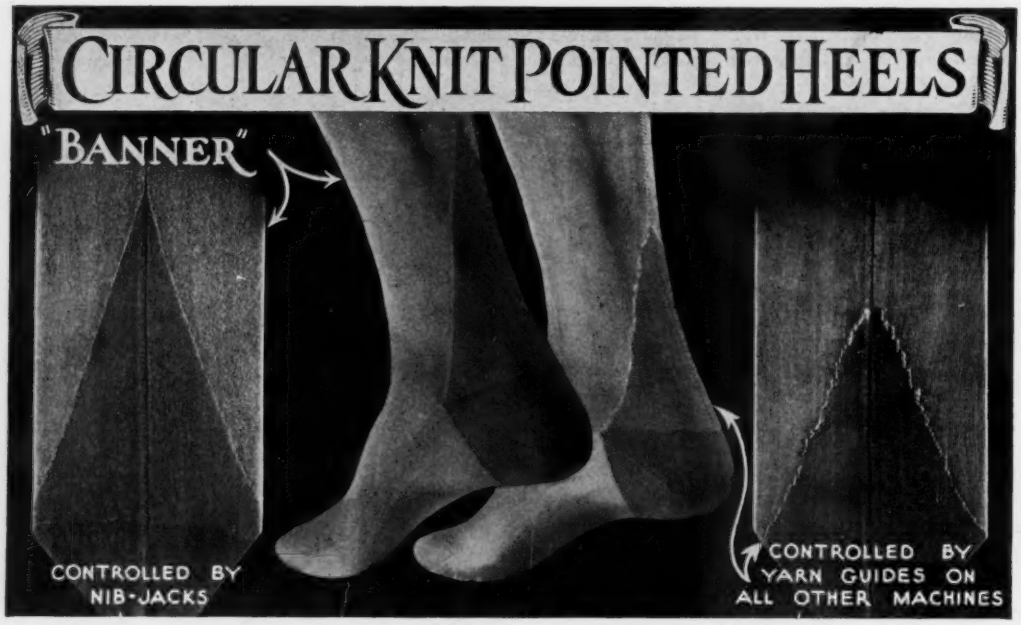
If one wishes to make a cheaper stocking with eight strands of silk, a style can be made with a cotton welt, cotton heel, cotton sole and toe. The welt should be made with either 50s/2 or 60s/2 and knit 32 courses per inch. The leg of the stocking should be knit 46 courses per inch in a 39- or 42-gauge machine and 48 courses on a 45-gauge machine. The number of narrowings after the welt should be five narrowings on a 39- or 42-gauge machine and six narrowings on a 45-gauge machine. The number of narrowings in the leg on a 39-gauge machine should be twenty-six narrowings and on a 42-gauge machine twenty-eight narrowings and a 45-gauge machine, thirty narrowings. The splicing should be plaited with either 80s/2 or 90s/2 cotton and made two or two and one quarter inches long. The heel should be made with two ends of 70s/2 cotton and made two and five-eighths inches long. The sole of the foot should be made with 50s/2 cotton and the toe should be made with two ends of 70s/2 cotton.

Should one desire to make either of these two styles with seven strand silk instead of eight strand silk, the same construction can be used; the only changes necessary is that the stocking should be made two courses per inch tighter.

When making heavy weight hosiery the same construction should be used as when making medium weight hosiery, in reference to the number of narrowings and width of needle bar. The same size cotton can be used although a heavier size may be used in heel, sole and toe. A ten strand stocking should be knit 47 courses per inch in the leg and an eleven strand hose should be knit 46 courses per inch.

For constructing a so-called price merchandise or in other words constructing a stocking at the lowest cost possible, the following construction can be used for either a nine strand, ten strand or eleven strand stocking. This construction is given as being made on a 42-gauge machine and should be made on a needle bar of width of 344 needles or a width of twelve and one quarter inches. The welt should be made with 50s/2 cotton and knit the welt 30 courses per inch. The courses per inch on a nine strand stocking should be 44 courses, on a ten strand stocking 43 courses per inch and on an eleven strand stocking, 42 courses per inch. Place four narrowings in the leg after the welt, each narrowing to be placed 20 courses apart. Place twenty-four narrowings in the leg, each narrowing eight courses apart. The width of the instep should be 112 needles. Eleven narrowings should be placed in the heel, same as in all styles made. The foot would be standard width. In the sole of the foot use either 45s/2 or 50s/2 cotton and in the toe, use 2 ends of either 60s/2 or 70s/2 cotton. This construction is such that because of the nar-

CIRCULAR KNIT POINTED HEELS



Are you absolutely assured of perfectly tapered reinforced pointed Heels, with your present equipment?

There is no assurance of perfect work unless there is positive control of each needle.

The "BANNER" Nib-Jack Pointed Heel machine is the only circular knit machine that absolutely controls each needle independently. By their use you are absolutely free from any infringement, confident of better work, less seconds, greater production and more profits.

A glance at the above illustration will show you the marked contrast between the Pointed Heels made on "BANNER" Nib-Jack machines and those of all other makes using other methods.

HEMPHILL COMPANY
MAIN OFFICE AND FACTORY
PAWTUCKET RHODE ISLAND

New York Sales and Show Rooms
93 Worth Street, New York

Southern Office
James Bldg., Chattanooga, Tenn.

Philadelphia Sales and Show Rooms
Colonial Trust Bldg., 13th and Market Sts.

row width of the needle bar less material is used and at the same time, the hose is constructed so that it will fit snug and for a so-called price stocking will make a fine appearing stocking.

There are two things that must be correct when constructing any style number in full-fashioned hosiery and that is that the welt is elastic enough and the ankle is neither too tight nor too loose. In making tests of these two points, I find that if a welt of a dyed stocking will stretch at least eleven and one-half inches on a ruler that the top is wide enough for the average woman. In testing the ankle or instep, I take a dyed stocking and stretch the instep, including the heel and this should stretch about six and one-half inches. Any less stretch will make the stocking too tight across the instep for the average woman and a greater stretch will make the stocking too loose and this always makes an unsightly appearance when worn.

Most modern knitting machines are now equipped with course counters or regulators and the length and number of courses needed for each complete stocking must be figured out by the one who constructs the style numbers. The general standard used on a dyed stocking to-day, after dyed, is a four inch welt, twenty-nine inches long for medium and heavy weight hosiery and thirty inches long for chiffon hosiery. The general length of hosiery from the last narrowing in the leg to the beginning of the splicing is four inches. Information as to the number of courses to knit on a machine and how long a leg of a stocking should be when completed on a legging machine, must be decided by the manufacturer, as there are no standard forms or boards used and as each manufacturer has his own special forms, the length of the hose must be made so that they will board the standard length on the forms.

Where a course counter or regulator is used, it is best to make out a construction chart after the proper standard has been established. This will save considerable time, should at any time it be found necessary to change the knitting machines from one style to another. A good working construction chart can be made out as follows: using the four strand style number as an illustration, calling this style 400.

CONSTRUCTION CHART.

Jan. 1, 1928.

STYLE 400 42 GAUGE

40 Courses per inch in welt.
52 Courses per inch in leg.
Welt five inches long.
Splicing 2¼ inches long.
Heel 2¾ inches long.
Silk in welt, 8 strand.
Silk in leg, 4 thread.
Cotton in heel plaited with 100s/2.
Cotton in sole plaited with 100s/2.
Silk in toe, 8 strand.
Cotton in toe plaited with 100s/2.
Width of needle bar, leggers, 392 needles.
Width of needle bar, footers, 260 needles.
Width of instep, 128 needles.
Number of narrowings after welt, 6 narrowings.
Number of narrowings in leg, 27 narrowings.
Number of narrowings in heel, 11 narrowings.
Number of narrowings in gusset, 8 narrowings.
Number of narrowings in toe, 40 narrowings.
Full length finished in grey, 33 inches.

LENGTH REGULATOR SPECIFICATIONS.

Welt, 312 courses.
After welt, 36 courses, then 6 narrowings.
20 courses apart.
550 courses from last narrowing
After welt to first narrowing in leg.
27 narrowings in leg, 8 courses apart.
254 courses from last narrowing in leg to splicing.
96 courses in splicing.
80 courses in heel to first narrowing, then 5 narrowings.
4 courses and 6 narrowings, 2 courses apart.
30 courses after loose course in heel.

In conclusion, there is one thing in the matter of constructing full-fashioned hosiery, and that is, to endeavor to standardize as near as possible in all styles. Try to have all insteps alike, so that it is not necessary to make radical changes, especially on footing machines, when a change is made from one style to another. On a legging machine, try to avoid as many style changes as possible, as this causes loss of production, and especially try not to change from chiffon hosiery to heavy weight; as each change means some adjusting of machines and constantly adjusting machinery soon causes trouble. By keeping each machine on a certain style number, a greater production is secured, less waste is made and results in a better and more standard stocking, which naturally means better profits and satisfied customers.

Knitting Show April 16th to 20th.

The 1928 Knitting Arts Exhibition will be held at the Commercial Museum, Philadelphia, Pa., from Monday, April 16th, through Friday, April 20th, it is announced by Chester I. Campbell, general manager. For the 24th time, the National Association of Hosiery and Underwear Manufacturers will convene at the exhibition for the annual meeting of the organization.

The annual luncheon will be held at the Museum during the week, where the Association members, exhibitors and visiting executives of the knitting industry will meet on an informal basis.

Actual working exhibits and demonstrations of various knitting machines and allied products will make the exhibition both interesting and educational to the buyers, executives, chemists and others who will go through the museum during the five days that the display is open.

Wood Preservation.

C. Marshall Taylor has been appointed vice-president and general manager of the Curtin-Howe Corporation, 11 Park Place, New York City. This company holds the commercial rights to the new wood preservative developed by the engineering laboratories of the Western Union Telegraph Company. This preservative, zinc meta-arsenite, is the standard of these laboratories. It is permanently fixed in the wood using the standard processes of the preserving industry. The wood retains its natural color, it is stated, and can be readily painted. Mr. Taylor has been actively engaged in wood preservation since 1906. For 15 years he operated the Port Reading Creosoting Plant for the Reading Company and the Central R. R., of New Jersey. He has been president of the American Wood Preservers' Association.

Pacific Coast Offices for Cutler-Hammer.

Cutler-Hammer Mfg. Co., Milwaukee, Wis., have established their own Pacific coast sales offices, in San Francisco, Los Angeles, and Seattle, in each of which complete stocks of standard items in the Cutler-Hammer line will be carried. This is the second new sales district to be opened within a short period—an office at Atlanta, Ga., having recently been established.

Hoffman Crown Moves to New Home.

Hoffman Crown Mfg. Company announces the removal to larger quarters at 615 Chestnut Street, in Philadelphia, Pa.

anyone who compares- KNOWS

Interesting history of the knitting arts, including newest developments fully illustrated mailed free upon request.

THE FIDELITY UNIVERSAL RIBBER

FIDELITY MACHINE COMPANY

3908-18 Frankford Avenue
Philadelphia, Pa.

120 Broadway, NEW YORK CITY

FIDELITY

Calculating Production in the Knitting Mill

Methods Used to Establish Formulae for Easy and Accurate Figuring; Also Examples of Their Application

BY WILLIAM DAVIS, M. A.

The calculation of production on knitting and auxiliary machines can be made a useful adjunct of cost accounting, and one of the first items in the hosiery manufacturing plant which lends itself to such treatment is that of winding. Most knitting factories are equipped with a winding plant in some form or another; today many have several types of winding mechanisms, one for the cones, another for large bobbin building suitable for use on web producing machines, and another special type for the treatment of artificial or real silk.

Winding is being recognized more and more as a major operation in hosiery manufacturing as is shown by the change in personnel which has taken place since very fine gauge fabrics have come so much to the front. A large percentage of the faults in such goods were directly traceable to defects in the winding operation and recent research work has shown that those streaks and lines which are such a serious cause of loss in silk goods are often due to irregularities which occur in the winding.

There is a wide divergence of production on the several types of hosiery winding machines. For certain branches of the trade the yarn can be quite suitably wound on cheeses, and the Universal type of machine gives an enormous production due to its high spindle speed and light action, combined with the great simplification which has been effected in the ways of joining up the thread when broken. For fine gauge goods however, it is found that ultra-rapid winding sets up a multitude of internal strains which have to relax themselves before the fabric is stable in construction. In this process of unloading those internal strains, the texture of the fabric becomes distorted and irregularities appear in the stitch formation. It is for this reason that in winding real and artificial silk, the speed of the winding operation is considerably reduced over the normal, and in very fine deniers the production is very slow and the operation costly. The speed is further reduced in the case of dyed yarns to give the filaments time to come free from each other in unwinding and in some grades of this material, it is about as much as a skilled operator can do to tend 6 or 8 spindles.

It is useful to be able to ascertain the capacity of the various winding machines and to compare what is being obtained from the machine with what is theoretically possible. Let the formula be devised from an example as follows: Give the weight of 2/32s worsted yarn wound in a week, which, with deductions for stoppages of the machine, is equal to 40 hours, there are 48 spindles, and the machines is winding at the rate of 72 yards per minute.

72×60 = yards of yarn wound per hour.
$72 \times 60 \times 40$ = yards of yarn wound per 40 hour week.
$72 \times 60 \times 40 \times 48$ = yards wound by 48 spindles in a 40 hour week.

From the given counts of yarn, 2/32s worsted, it is known that 16 times 560 yards are in one pound, therefore to obtain the production of yarn in pounds from the above total, these numbers are divided into them, thus:

$$\frac{72 \times 60 \times 40 \times 48}{16 \times 560} = 925.8 \text{ pounds.}$$

From this example it is possible to devise a formula which will apply to all cases and which is capable of transformation to give any of the other factors required. In the example let Y = yards wound per spindle per minute, let S represent the number of spindles, and H the number of hours time, with C as the counts and B as the basis. Substituting these symbols we obtain this result:

$$\frac{Y \times 60 \times H \times S}{C \times B} = W \text{ the weight in pounds.}$$

In this formula the 60 will always appear and if the yarn is worsted 560, or if cotton 840, so that it will be convenient to devise a shorter method by cancelling out the 60/560 = 3/28 for worsted. By working this out, one can obtain the following transpositions of the equation:

(1) $\dfrac{3 \times Y \times H \times S}{28 \times C} = W$ (2) $\dfrac{3 \times Y \times H \times S}{28 \times W} = C$

(3) $\dfrac{28 \times W \times C}{3 \times Y \times H} = S$ (4) $\dfrac{28 \times W \times C}{3 \times Y \times S} = H$

(5) $\dfrac{28 \times W \times C}{3 \times H \times S} = Y$

The formula can now be given written out more fully in the following series numbered 1 to 5.

(1) $\dfrac{3 \times \text{Yards} \times \text{Hours} \times \text{Spindles}}{28 \times \text{Counts}} = \text{Weight in pounds.}$

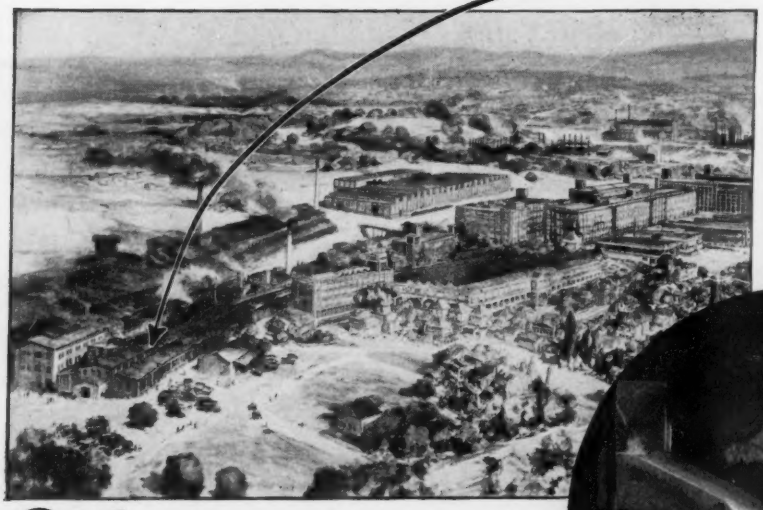
(2) $\dfrac{3 \times \text{Yards} \times \text{Hours} \times \text{Spindles}}{28 \times \text{Weight}} = \text{Yarn counts.}$

(3) $\dfrac{28 \times \text{Weight} \times \text{Counts}}{3 \times \text{Yards} \times \text{Hours}} = \text{Spindles.}$

(4) $\dfrac{28 \times \text{Weight} \times \text{Counts}}{3 \times \text{Yards} \times \text{Spindles}} = \text{Hours.}$

(5) $\dfrac{28 \times \text{Weight} \times \text{Counts}}{3 \times \text{Hours} \times \text{Spindles}} = \text{Yards.}$

In this series the yarn number must be given in the worsted denomination, but if it is required in the cotton



FOUNDRY
No. 1

Where a Flaming Ladle Spills Tons of "Reading" Frames

It is difficult to connect roaring furnaces and sweating molders with machines which turn out dainty meshes of sheerest silk. ¶ But the uncanny exactness and regularity of the fine mechanisms which manipulate this delicate fabric depend, to a great extent, upon the strong and rigid castings to which they are attached. ¶ Thus, the foundry's importance looms large in the many steps between raw materials and finished product: Every operation being carried out in our own shop under the careful supervision of experts who know exactly what mill-owners expect of Reading Full-Fashioned Knitting Machines—*uninterrupted performance, quality production and a generation of service.*

TEXTILE MACHINE WORKS, *Reading, Pa.*

The **READING** *Full Fashioned Knitting Machine*

system, then the number 840 must be substituted for 560 in the original form which makes $\frac{60}{840} = \frac{1}{14}$ and this number must replace $\frac{3}{28}$ in all the formulae just given.

Example 1. Calculate the weight of 250 denier artificial silk wound in a 48 hour week, allowing one-third for stoppages, the worker tends 32 spindles and the spindles wind at the rate of 50 yards per minute.

Transpose the deniers counts into cotton thus: 5282.5 ÷ 250 = 21.13 cotton equivalent. Substitute as in formula (1) but as the yarn is cotton, take $\frac{1}{14}$ instead of $\frac{3}{28}$. A 48 hour week less one-third = 32 hours which the machines are in operation, the other time being absorbed in repairing breakages and placing new hanks of yarn on the runners, etc.

$$\frac{1 \times 50 \times 32 \times 32}{14 \times 21.13} = 173 \text{ pounds weight.}$$

Example 2. Calculate the weight of yarn produced from a winding machine with 48 spindles each revolving so as to wind 84 yards of yarn per minute, the counts are 28 skeins and the time is a net week of 36 hours, the rest of the time being deducted for machine stoppages.

To use the formula bring the 28 skeins to worsted counts thus:

$$\frac{28 \times 256}{560} = 12.8 \text{ worsted equivalent substituting in the worsted formula} = \frac{3 \times 84 \times 36 \times 48}{28 \times 12.8} = 1215$$

pounds of yarn.

Example 3. Calculate the worsted counts of yarn on a winding machine with 40 spindles, winding yarn at the rate of 84 yards per minute, the output in 36 hours full operation being 1200 pounds of yarn.

To work out this problem, formula (2) can be used as it stands, as the counts are in the worsted system:

$$\frac{3 \times 84 \times 36 \times 40}{28 \times 1200} = 10.8\text{s worsted counts.}$$

Example 4. Calculate the number of spindles required to wind 280 pounds of 300 denier yarn in a net week of 40 hours, the spindles wind 64 yards of yarn each per minute.

Convert the 300 deniers to cotton equivalent: 5282.5 ÷ 300 = 17.6 cotton. Substituting in formula (3); but taking 14 in place of 28/3:

$$\frac{14 \times 280 \times 17.6}{64 \times 40} = 27 \text{ spindles.}$$

Example 5. Calculate the hours required to wind 3000 pounds of yarn in 24s cotton counts on 96 spindles each winding 72 yards of yarn per minute. Allow 20 per cent for stoppages.

Using formula (4) the problem is set out as follows:

$$\frac{14 \times 3000 \times 24}{72 \times 96} = 145.8 \text{ hours to which is added 20 per cent for stoppages} = 175 \text{ hours.}$$

Example 6. Calculate the spindle speed of a winding machine working on 12s cotton counts of which 2000 pounds are wound on 72 spindles in a theoretical period of 40 hours.

Using formula (5) with the alteration for cotton counts:

$$\frac{14 \times 2000 \times 12}{40 \times 72} = 116.6 \text{ yards per minute.}$$

In figuring out costs due to winding, it is convenient to express the figure as so much per pound, or in the case of hosiery as so much per dozen hose expressed as an accurately determined figure on the weight. A widely adopted manufacturing practice is to pay so much per pound for winding hosiery yarns, or more conveniently expressed as an amount on a 10 pound bundle or other weight in which yarns are usually delivered to the manufacturer. These bundles are fixed according to their convenience in handling or unloading, 10 pounds being a convenient weight which a worker can carry from point to point and the bundles can also be rapidly counted out to the winding machine operator. If for example the operator earns $10 per week, and gives an output of 1500 pounds of wound yarn, then the cost per 10 pound lot will be found thus: 1500 pounds = 150 × 10 pound lots and this divided into $10, gives 1000 divided by 150 = 6.6 cents per 10 pound bundle, or .66 cent per pound has to be reckoned as due to the winding process. It will be seen also that the cost depends on the counts of the yarn, the nature of the material and the state of entanglement in which it is delivered by the spinner. Rayon yarns are by far the most expensive yarns to wind, but it is much cheaper for the manufacturer to wind them himself than to buy them ready wound from the makers.

Example 7. Find the earnings of an operator who is paid 12 cents per 10 pound bundle of yarn, 8s cotton counts, speed of spindle = 500 feet per minute, 48 spindles working a 48 hour week, with one-third off for stoppages = 32 hours worked per week.

Spindle speed = 500 divided by 3 = yards per minute. Using formula (1) adapted to the cotton denomination we have:

$$\frac{500 \times 32 \times 48}{3 \times 14 \times 8} = 2285.7 \text{ pounds.}$$

This gives in 10-pound bundles 228.57 and this multiplied by 12 cents = 27.43 per week.

Example 8. If an operator can only manage 12 spindles of winding in a fine denier of rayon, find the cost per pound due to winding if she is paid a wage of $25 per week, which is 48 hours but only two-thirds effective. The spindle speed is 420 feet per minute, and the denier of the rayon is 110.

110 denier rayon = 5282.5 ÷ 110 = 48s cotton counts. Two-thirds of 48 = 32 hours effective working and 420 feet per minute = 140 yards per minute. Using formula (1) adapted for the cotton system we arrange the set-out as follows:

$$\frac{140 \times 32 \times 12}{14 \times 48} = 80 \text{ pounds per week.}$$

$25 divided by 80 = 31.2 cents per pound for winding.

Example 9. Find the output of a winding machine

operator who has two sets of yarn on her machine as follows: (A) 24 spindles working on 2/30s worsted counts, with a two-third efficiency. (B) 24 spindles on 20s single with a 40 per cent efficiency. The working week is 48 hours. Spindle speed 480 feet per minute. (A) 24 spindles on 2/30s or 15s worsted, working 32 hours out of 48. 480 feet = 160 yards per minute. Using formula (1) adapted for worsted.

$$\frac{3 \times 160 \times 32 \times 24}{28 \times 15} = 877.7 \text{ pounds for 2/30s worsted.}$$

$$40 \text{ per cent of 48 hours} = \frac{48 \times 40}{100} = 19.2 \text{ effective hours.}$$

$$\frac{3 \times 160 \times 19.2 \times 24}{28 \times 20} = 394.9 \text{ pounds of 20s single.}$$

$877.7 + 394.97 = 1272.67$ total pounds per week.

From the winding machines it is natural to pass to production problems connected with the great class of circular machines which are such an important branch of the knitting industry everywhere. The production from circular machines is often expressed as the yards per day or week, and for costing purposes the production of a set of frames is taken as the unit and the yardage is divided into the costs of the various workers concerned as a figure on the cost per yard or in some cases the cost per pound. The production from a circular machine is often given as the pounds of material which can be produced in a working day, but it is undoubtedly more accurate to obtain the length in yards as well and it is then a simple step to secure the weight per yard which is being increasingly used in the commerce of knitted fabric as a convenient medium of expressing the weight and particularly the texture of a piece of knitted fabric.

The formulae concerned with these various items can be drawn out from first principles and let the following practical particulars be given as a foundation. Let the frame have 28 cylinder revolutions per minute, each frame has six feeds on the circumference, and there are 18 courses per inch; find the production per eight hour day in yards, there being 6½ effective hours, the balance being wasted in stoppages.

28×6 = courses or rounds of knitting per minute.

$28 \times 6 \times 60$ = courses or rounds of knitting per hour.

$28 \times 6 \times 60 \times 6\frac{1}{2}$ = Courses or rounds of knitting per 6½ hours.

$28 \times 6 \times 60 \times 6\frac{1}{2} \times 4$ = courses or rounds of knitting by 4 machines.

This gives the total courses or rounds of knitting in the period, and it is stated that there are 18 courses per inch so that the total inches will be obtained by dividing the above total by 18 and the yards obtained by dividing further by 36 inches to the yard. This is set out in the following final formula:

$$\frac{28 \times 6 \times 60 \times 6.5 \times 4}{18 \times 36} = 404.4 \text{ yards production.}$$

From this foundation example it is possible to obtain a series of formulae which will apply to all cases of this kind. Let the total courses or rounds of knitting per minute be represented by R. H = hours, Y = the length in yards, K = courses per inch, F = frames and substituting those symbols we have:

$$(1) \quad \frac{R \times 60 \times H \times F}{K \times 36} = Y$$

Cancelling out the 60 and 36 gives 5 and 3 respectively which makes the formula as follows:

$$(1) \quad \frac{5 \times R \times H \times F}{3 \times K} = Y$$

The others are derived from this equation as follows:

$$(2) \quad \frac{5 \times R \times H \times F}{3 \times Y} = K \qquad (3) \quad \frac{3 \times K \times Y}{5 \times R \times F} = H$$

$$(4) \quad \frac{3 \times K \times Y}{5 \times H \times F} = R \qquad (5) \quad \frac{3 \times K \times Y}{5 \times R \times H} = F$$

Working out those particulars according to the symbols, the five formulae are stated fully as follows:

Where R = rounds of the cylinder revolutions of the machine times the number of feeds in the circumstance:

$$(1) \quad \frac{5 \times \text{Rounds} \times \text{Hours} \times \text{Frames}}{3 \times \text{Courses per inch}} = \text{Yards.}$$

$$(2) \quad \frac{5 \times \text{Rounds} \times \text{Hours} \times \text{Frames}}{3 \times \text{Yards}} = \text{Courses per inch.}$$

$$(3) \quad \frac{3 \times \text{Courses per inch} \times \text{Yards}}{5 \times \text{Rounds} \times \text{Frames}} = \text{Hours.}$$

$$(4) \quad \frac{3 \times \text{Courses} \times \text{Yards}}{5 \times \text{Hours} \times \text{Frames}} = \text{Rounds per minute.}$$

$$(5) \quad \frac{3 \times \text{Courses} \times \text{Yards}}{5 \times \text{Rounds} \times \text{Hours}} = \text{Frames.}$$

These formulae can now be illustrated in use by the following examples.

Example 10. Calculate the output of 6 machines, 8 feeds each with 32 cylinder revolutions per minute, 25 per cent stoppages on a 48 hour week, 24 courses per inch.

In this example 25 per cent stoppages give an effective week of 48 less 25 per cent = 36 hours, and the number of rounds knitted per minute is $32 \times 8 = 256$. Using formula (1):

$$\frac{5 \times 256 \times 36 \times 6}{3 \times 24} = 3840 \text{ yards production.}$$

Example 11. Calculate the time to work 10,000 yards of fabric on 12 frames of 6 feeds each with 40 cylinder revolutions per minute, 20 course per inch. Using formula (3):

$$\frac{3 \times 20 \times 10{,}000}{5 \times 6 \times 40 \times 12} = 41.6 \text{ hours.}$$

Example 12. Calculate the rounds of knitting produced per minute on 6 frames in 8 hours net, working 1800 yards in this time with 18 courses per inch. Using formula (4)

$$\frac{3 \times 18 \times 1800}{5 \times 8 \times 6} = 405$$ rounds which in a 10 feed frame would give 40.5 revolutions of the cylinder per minute.

Example 13. Calculate the number of frames required to work 40,000 yards in a 32 hours net week, there are eight feeds each and 35 cylinder revolutions per minute with 25 courses inserted per inch. Using formula (5):

$$\frac{3 \times 25 \times 40{,}000}{5 \times 8 \times 35 \times 32} = 67 \text{ frames.}$$

"Cotton Mill Mathematics."

This is the title of a new textbook prepared for use in the night, part-time and day textile classes of cotton mill communities and plants. It is written by Thomas H. Quigley, of the vocational department of the Georgia School of Technology, Atlanta, and W. S. Smith, overseer of weaving, Pacolet Mfg. Company, New Holland, Ga.

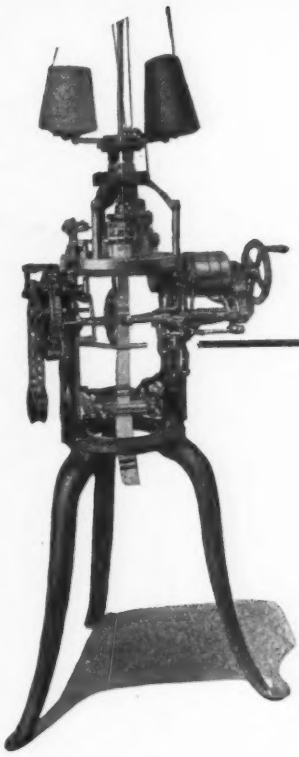
The book is written for young people of working age and adults already familiar in a general or practical way with the cotton mill, who have had little or no training in mathematics. It begins with elementary arithmetic and aims to carry the learner through many of the everyday, elementary, but somewhat complicated calculations necessary in the usual plain goods mill. The volume is in two parts; Part I is arranged in the usual logical manner of common arithmetic, using textile terms and figures in the examples—Part II is arranged according to textile subjects, and teaches the technical textile mathematics of the plain goods mill. The collaboration of Mr. Quigley's teaching experience and Mr. Smith's practical knowledge has resulted in an excellent achievement of the book's purposes, and it will undoubtedly find extensive use generally among mill schools. It fills a need that has not been covered by other books more theoretical and more advanced. The price is $1.25 per copy net. Copies may be secured through COTTON's Book Department, or direct from the publishers, Smith, Hammond & Company, 101 Marietta St., Atlanta, Ga.

"Textile Color Mixing."

The third revised edition of this manual for dyers, calico printers and chemists has been issued by the publishers, D. Van Nostrand Co., Inc., 8 Warren St., New York City. The same style of the original editions has been preserved, but the modern representatives of the old pre-war dyes have been substituted. David Paterson, F.R.S.E., is the author. The price is $4.50 per copy net. Copies may be secured direct from the publishers, or through COTTON's Book Department.

Link-Belt Appointments.

Link-Belt Company, 910 S. Michigan Ave., Chicago, Ill., has announced the appointment of the following four vice-presidents: George P. Torrence, with headquarters at Indianapolis, in general charge of Indianapolis operations and sales of Indianapolis plant products; George L. Morehead, Philadelphia, in charge of eastern operations and sales; Frank B. Caldwell, in charge of the Chicago plant and sales offices tributary thereto; and W. C. Carter, in general charge of production at all plants, with headquarters at the general office, Chicago.



Ribbers
Body Machines
Hosiery Machines
Necktie Machines

Circular Machines for Every Purpose

We will be glad to furnish information of our complete line.

THE continued popularity of ultra-fancy effects is a vital factor to guide your choice of knitting machinery. Brinton machines knit an almost infinite variety of patterns and hold accurately to the pattern chosen. That's one reason (an important one) for the high esteem in which mill owners hold Brinton machinery.

H. BRINTON COMPANY
3700 Kensington Avenue, Philadelphia

BRINTON CIRCULAR KNITTING MACHINES

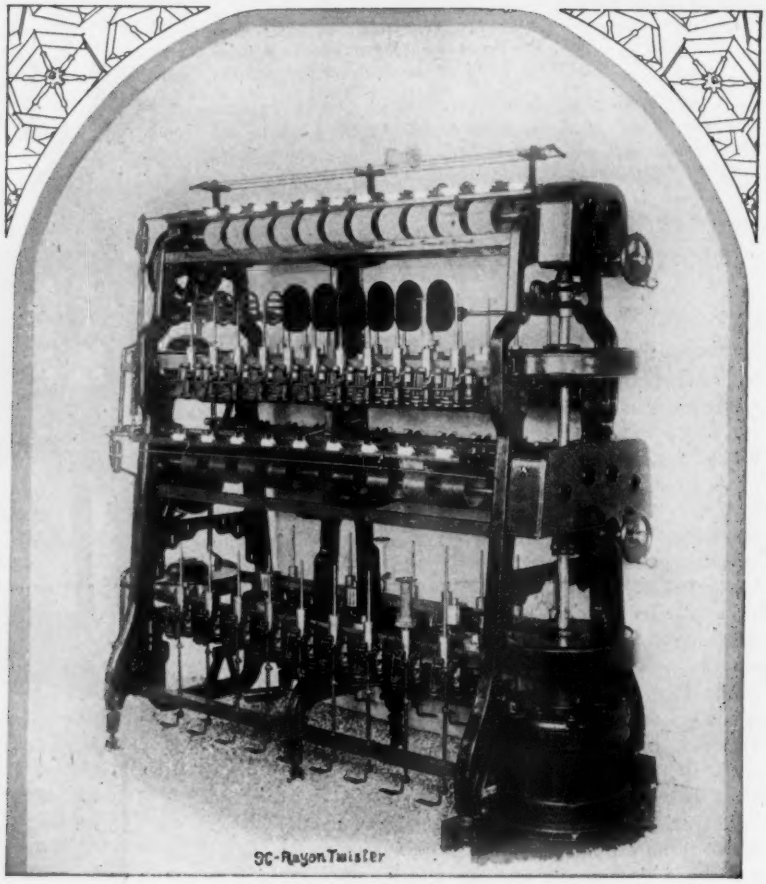
FOREIGN AGENTS

Great Britain and the Continent: Wildt & Co., Ltd., Leicester, Eng.

Australia: J. H. Butter & Co., Sydney, Melbourne.

South America: Santiago Scotto, 15 de Novumbre 1899, Esq. Pozas, Buenos Aires, Argentine Republic.

China and Japan: Elbrook, Inc., 50 Peking Road, Shanghai, China.



Atwood Plant in 1664

ATWOOD MACHINERY

SPINNERS - WINDERS - REDRAW FRAMES - DOUBLERS - TWISTERS - WARPERS - REELERS - SPOOLERS

The Home of Atwood Today

Each successive stage of Atwood Machinery development has alike upheld the high purposes and aims of Atwood's founder . . . Slowly, surely, this improvement has marched steadily forward, like a lengthening shadow, ever in line with the aspirations of that persevering figure, John E. Atwood . . . Building equipment that anticipates tomorrow's needs is the aim of Atwood today . . . It is this field-view of ultimate machinery requirements that has resulted in the near-universal adoption of Atwood Machinery by industries we serve.

ATWOOD MACHINE COMPANY

Stonington, Conn. 267 Fifth Avenue, New York

ATWOOD MACHINERY — SILK & RAYON THROWING MACHINERY

Representatives; W. A. KENNEDY, 1102 JOHNSTON BLDG., CHARLOTTE, N.C.. E. G. PAULES, P.O. BOX 177, INGLEWOOD, CAL.

The A B C of Dyeing

Importance of Dyehouse Location on the Difficult Task of Color Matching. Knowing the Properties of Dyes a Needful Requirement

BY NOEL D. WHITE.

PART NINE.

A modern, well equipped dyehouse should have a good, well lighted place to match colors correctly. Every dyer realizes that, but not all dyehouses are so equipped.

The first thing a dyer should insist on, upon entering a new job, should be a well lighted place in which to do his matching. A window facing the north would be an ideal place, but how many dyehouses are built with that idea foremost in the mind of the builder?

It is true that we are making progress in that line. More and more textile manufacturers are coming to realize that the dyehouse deserves some consideration; more than it had been given in the past. It had been the general idea that any out-of-the-way place was good enough for the dyehouse. It was put in the cellar, or in the basement, or in back of the boiler, or on the street floor of tall buildings, thereby making it extremely difficult for the light of day to reach it.

In a mill located in Brooklyn, New York, where a very fine line of silk goods were manufactured, the dyehouse was set partly in the basement, and a part extended in the yard, it was covered with glass and heavy wire for protection. It would have been well placed only for the fact that it was closely surrounded by buildings five and six stories high, shutting out the light for the biggest part of the day. On cloudy days there was no light at all in any part of that dyehouse, and yet in that mill they were exceedingly exacting in their matching. They had to be, considering the goods they manufactured. A large percentage of the work was returned to the dyehouse every day as bad matches. That dyehouse should have been placed on the top floor of their factory, but anyone suggesting such a thing in those days would have been considered out of his mind.

Now many dyehouses are placed on the top of the factory, and there is just where best results are obtained. You can have good daylight on the gloomiest day, as well as on bright days; also artificial light, for many colors to be matched correctly to the pattern have to be looked at under both lights; especially when dyeing is done for the trade. There are dyestuffs that look different when looked at under a gas jet, or an electric bulb, than they do when looked at in the daylight. Blues and violets appear redder, greens appear bluer, and yellow loses its density under artificial light.

Of course, the mill dyer using the same formula every time can not go very far off-shade, but the commission dyer having to match new shades every day must surely use all means possible to be able to obtain the correct matches required by a trade becoming more and more exacting.

Matching a shade by daylight it may come out correctly to pattern if the composition of the shade is known by the dyer as for repeat orders or from a formula made up by himself. But, if the combination is unknown to him, and he proceeds to get the shade according to rules followed for similar shades he may get some very surprising results.

Some colors which look bluish or greenish in the daytime, in the evening under an artificial light they may look altogether a different color. I have in mind an experience I had on one occasion when my wife bought a new dress for Easter Sunday. She bought it to match her grey bonnet and a pair of grey shoes. At that time little attention was paid to matching stockings because the dresses were worn long, down below the shoe tops. I had not seen the dress when she took it home, but on Sunday morning (a bright, sunny day) she came out all dressed in grey, and I noticed and told her how nicely matched was the whole outfit. The same day when we happened to be out walking about four o'clock in the afternoon I noticed that my wife was dressed in a lavender suit. I asked her why she had changed her dress, and she assured me it was the same one she had on in the morning. I could hardly believe it; the shoes and hat still looked grey but the dress certainly had the most reddish lavender hue I could imagine. Together we went to the store where she had bought the dress, and in a show window I saw a display of dresses the same shade as my wife's dress. They all looked lavender.

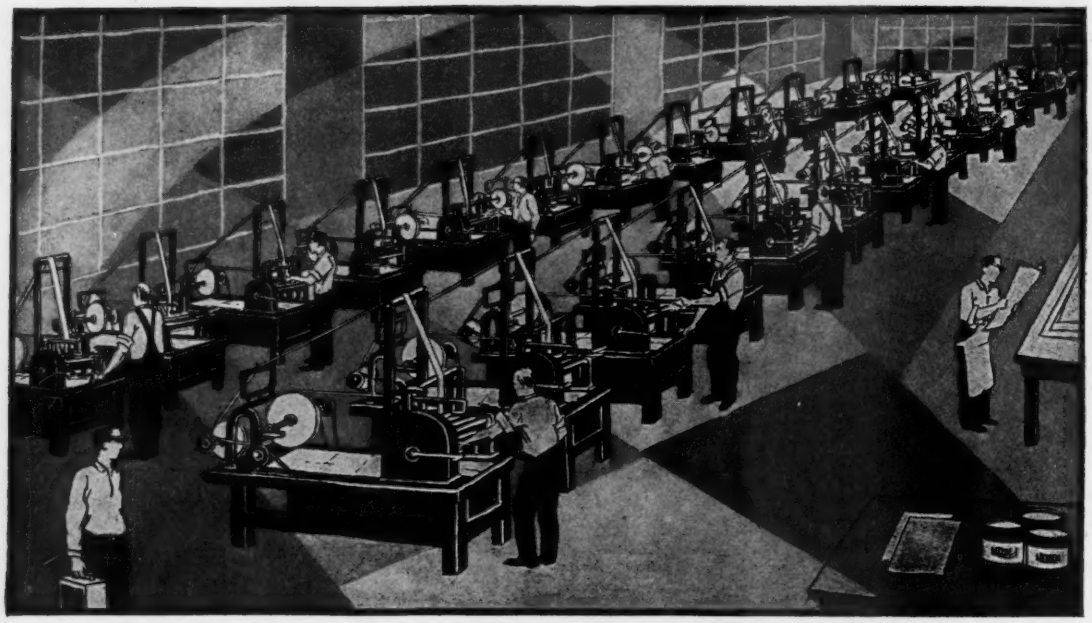
In the morning, just for curiosity, I went again to look at the displayed dresses, and now they appeared a good, greenish grey. That material evidently had been dyed with violet and yellow; in the morning, with intense daylight, the yellow showed up prominently, turning the violet into a greenish grey. In the subdued light of the evening and under artificial light, the yellow was absorbed and lost its color, while the violet showed up prominently with all its strength. The shoes and hat that had been dyed with nigrosine, or green, yellow and red, had retained their color even in the weaker afternoon light.

Of course, that was an extreme case. A dyer had to produce a fashionable shade for the occasion, and that proved to be a popular shade for that season. I related this to show how a dyer can be misled in the matching of unknown shade patterns. Viewed in both lights, however, an experienced dyer can always tell very nearly what dyes a given shade is composed of. When a color matches both kinds of illuminations it can be considered a good match.

Matching colors in any case is always a job for an expert. Whether it is done in the dyehouse by the dyer, or in the office, or in the store by the customer—it can always be found faulty if so desired.

There is a mill in a Pennsylvania town where they make a line of sewing silk. One of their brands is called by a Latin name meaning "Always the Same." This is how they proceed in matching their "Always the Same" colors: When the dyer thinks he has a good match to the pattern he is working on, he takes a skein and dries it, then he takes the dried skein in the spooling room and winds some of it on a spool partly filled with silk the same

(*Continued on page* 410)



You don't know.

Lamp wicks and leather . . . tennis balls and textiles . . . sausage casings and hosiery . . . certainly none of these industries seem to have anything in common. And yet . . .

In each of these industries there was one stumbling block to commercial independence and success.

It was the matter of identification!

But in spite of the importance of this subject, it has been the chief concern of only one company in the world. And that company is the Kaumagraph Company. With the development of Kaumagraph methods this stumbling block has been removed from many lines of industries.

Of course it is no news to you that over 75% of all trademarked hosiery is trademarked with Kaumagraph Transfers. It is no news that 75% of all textile trademarks are applied with Kaumagraphs. It is no news that over 65% of all leather gloves are trademarked with Kaumagraph.

But it must be news to you indeed . . . . interesting news . . . . that Kaumagraph Transfers have solved the identification problems for lamp wicks and typewriter covers, for neckties, spats, garters, leggings . . . . for sausage skins, buffing wheels and sample swatches . . . . for linens in hotels, restaurants, hospitals and clubs. More than 90% of all tennis balls made in the U. S. A. are trademarked with Kaumagraphs!

Yes, the world "has made a beaten path" to the door of Kaumagraph. For the business world has learned to entrust its trademark problems only to Kaumagraph; because they know that only Kaumagraph has the trademarking experience, the research facilities, the creative art service, the requisite knowledge of trademark requirements, the exclusive methods, and above all, the *will* to exercise the most painstaking care to solve intelligently and correctly the trademarking problems of an entire industry or a single manufacturer.

KAUMAGRAPH COMPANY
350 West 31st Street, New York
Boston Chicago Philadelphia Charlotte, N.C.
Paris, Ont. Paris, France

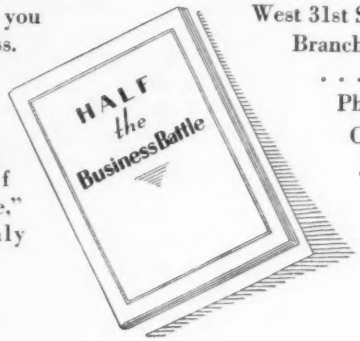
MAYBE *you* have a trademarking problem. It may be the elementary problem of designing a new trademark . . . Kaumagraph's Art Department, which has conceived many of the foremost trademarks in the world, will get busy and submit sketches to you.

It may be the problem of applying your trademark . . . Kaumagraph's Research Laboratory will proceed to develop a new product if necessary, or show you how to adapt an existing method of Kaumagraph trademarking to your personal needs.

It may be the problem of reducing identification costs . . . A Kaumagraph Representative will study your problems and make recommendations.

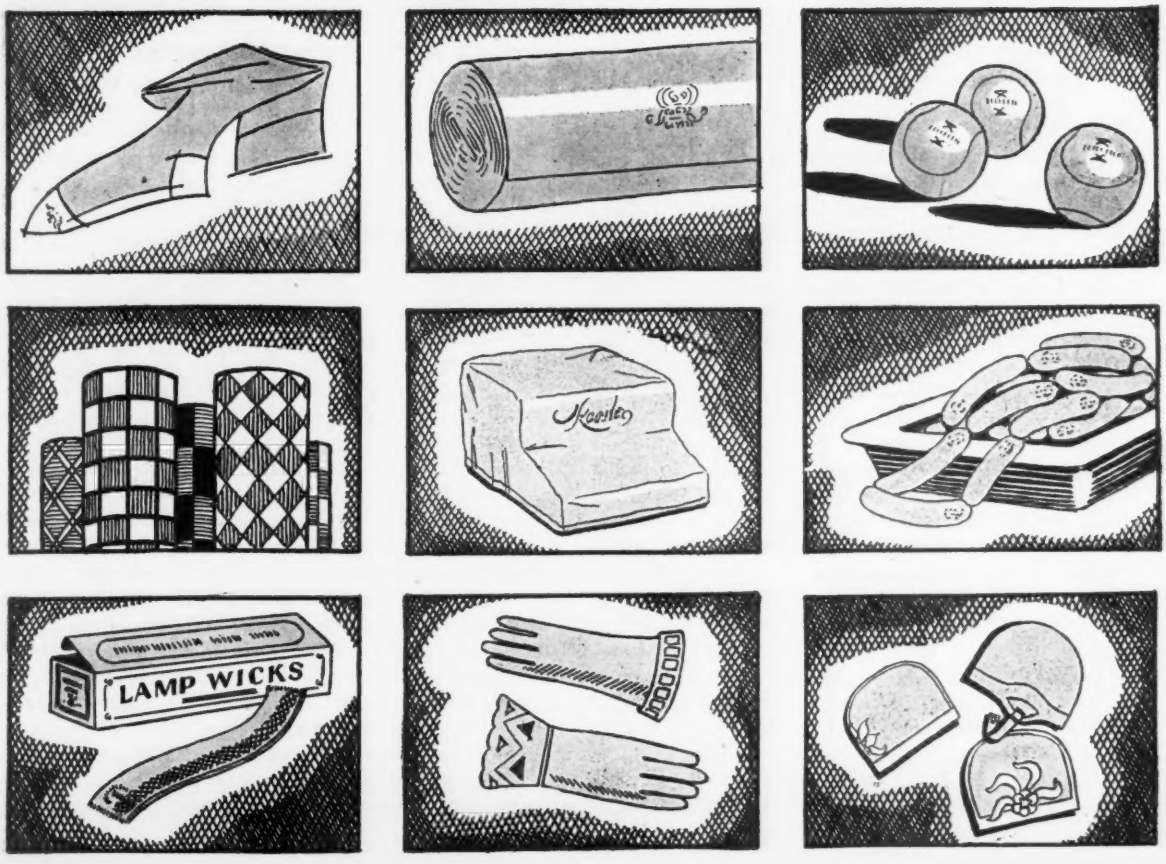
Whether you are acquainted with Kaumagraph or not, you don't know the half of the variety of ways that Kaumagraph can help you and your business.

We have therefore prepared a valuable volume, "Half the Business Battle," which not only gives the complete *whole* of Kaumagraph service but is a veritable textbook on the subject of trademarking.



We shall be glad to send you a copy of this important book free upon request to the Kaumagraph Company, 350 West 31st St., New York. Branches in Boston . . . Chicago . . . Philadelphia . . . Charlotte, N. C. . . . Paris, Ont. . . . Paris, France.

the half of it!



(*Continued from page* 407)

shade he is working on, covering part of the spool. The matching is done by looking at the spool with the sample pattern, and the same from the lot wound on it—the least difference is easily detected.

While it seems there is considerable work to matching colors that way that firm has a good reputation, and is eager to maintain it. For instance, take a repeat order for a given shade of ribbon dyed by two different dyers; if the first dyer has dyed the shade with a fluorescent dye in the combination, and the other dyer has neglected to match by artificial light thinking he can match correctly enough by daylight, the second order on reaching the store and being shown over the counter beside a remnant of the first shipment, it may be found to be of another shade. Almost without exception stores are lighted up in one way or another with artificial light even on the brightest day, and for that reason it is most important that colors be matched under both lights.

How would a dress look if it was made up of cloth dyed the same color in two different ways? The tailor can not be expected to know that the same color dyed by two different dyers may in the afternoon look different than in the morning.

There was a dyestuff brought out some years ago in Europe, called "Fluorescent Blue." Viewed in solution it showed all the colors of the rainbow. It was a most beautiful dyestuff, and could be mixed with all acid dyes. I was given a number of samples to dye with the new dyestuff. Apple Greens, Cadet Blues, Greys, Violets, and all colors dyed with that dye would show true in the day time, but at night they all looked red; no matter in what shade, that Blue would show up proportionate to the quantity used in it, but it appeared as if it had been a fast red. I often thought it would be brought out again, and full-fashioned hosiery dyed with it. Stockings dyed that way could be used for day wear; the most delicate shade could be dyed with that blue and look the fashionable color; then there would be no need of changing stockings for evening dress because when looked at in artificial light they would appear flesh, pink, or lavender colored. I have looked for that dyestuff in recent years, but failed to find it, but I have no doubt it will come out again. When that happens there will be many dyers who, not knowing of the properties of that blue dye will find it very troublesome to match colors dyed with it.

That it is very hard to match exactly alike lot after lot will be illustrated here by an incident that happened to this writer some years ago in dyeing silk yarn for the ribbon trade. We had an order for 150 pounds of silk to be dyed cardinal. As we only had facilities to dye 100 pound lots at a time, we started the dyeing in two vats; one with 100 pounds and the other with 50 pounds. We matched the two dyeings as closely as we could, then finished both lots and shipped to our customer. A few days afterwards we received a complaint together with some of the ribbons they had woven, showing that the warp looked uneven. They said the yarn had not been dyed evenly, but we soon found out that they had used the two dyes of the same lot promiscuously, and it had left a perceptible streak throughout the whole length of the ribbon. If we had sent them one dyeing and a few days afterwards sent them the other, there would have been no trouble.

Matching is the most important thing a dyer has to learn. To be able to judge a good match is a thing that only experience can teach. To correct a shade to a given pattern with precision is not a light task. A customer may ask for an exact match, and when he has what he wants it will be more a matter of opinion than an exact duplicate of a shade; it being that no two persons can see exactly alike, it will be readily seen that the best a dyer can do is to get as near as possible to a match as he can, for after all coloring is nothing more nor less than the production of an optical illusion.

Among the Knitting Mills.

The West Knitting Corporation, of Syracuse, N. Y., has completed arrangements to move its entire equipment to the South, and selected Wadesboro, N. C., as the new location. Representatives of the Wadesboro Chamber of Commerce and the Seaboard Airline Railway had been negotiating with the Syracuse firm for some time. The West Knitting Corporation has been manufacturing underwear for about forty years in, or near Syracuse. Its product is sold through A. J. Armstrong & Company. Under the new corporation, the stockholders elected the following directors: C. H. West, F. D. Webster, J. D. Horne, T. C. Coxe, W. Henry Liles, H. B. Allen, F. M. Hightower, T V. Hardison, and L. D. Rivers. The officers chosen are: C. H. West, president, L. D. Rivers, vice-president, and R. L. Lindsey, secretary. A considerable amount of land has been purchased on North Washington Street as a mill site for the new company, and a two-story brick, mill type building will be erected. Men's and boys' cotton underwear and womens' rayon underwear will be manufactured, with a capacity of approximately 400 dozen garments a day.

The new No. 4 mill of the Paducah Hosiery Mills, Inc., at Paducah, Kentucky, will knit children's fine grade cotton stockings, it is announced by Louis Rubel, president.

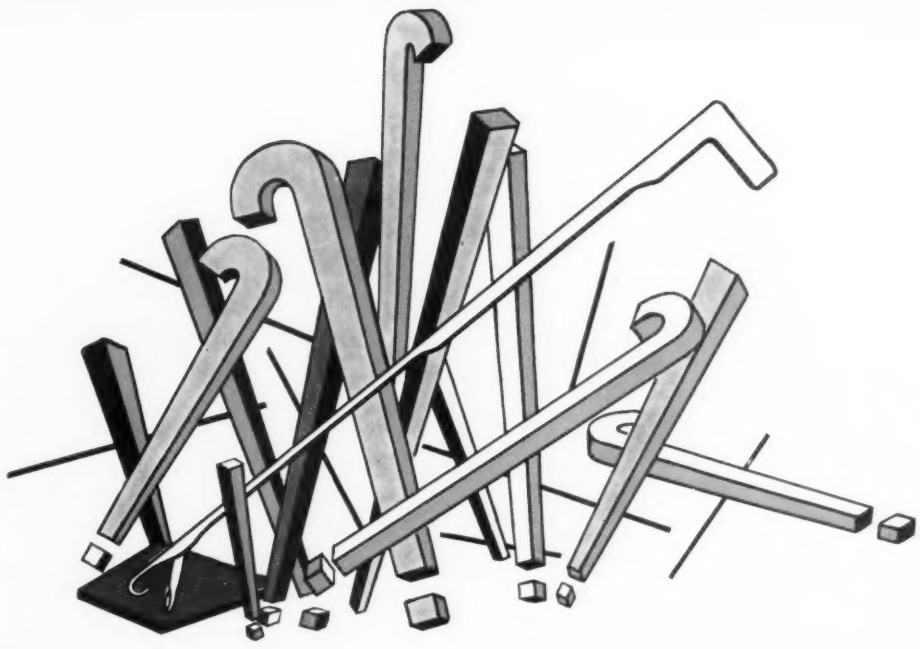
Utica Knitting Company has announced that it will rename the mill of the Avalon Knitwear Company, Anniston, Ala., which it recently purchased, to be Mill No. 9. The capacity will be virtually doubled, it is understood.

Chester Knitting Mills are moving machinery from their St. Louis plant to the plant at Rome, Ga., with a view to increasing production and adding a finishing plant.

Knoxville Cotton Mills, Knoxville, Tenn., manufacturers of yarns, will install Scott & Williams latch needle and Tompkins spring needle machines for the manufacture of men's medium weight and heavy weight underwear. A department for the manufacture of ribbed sweater coats is planned for the future. A two-story brick annex, 60x 100 feet, is being constructed to house the new equipment.

May Hosiery Mills, Burlington, N. C., have awarded contract for the new finishing building it will erect. The addition will be three stories high, 212 feet long. The present dyehouse, boarding room, etc., will be razed to make room for the new building, which will house these departments. Production in the finishing departments will be more than doubled. J. E. Sirrine & Company, Greenville, S. C., are the engineers.

The recently organized Bennett Hosiery Mills, Bennett, N. C., has secured a building and is installing machinery for the production of men's half-hose. W. C. Brewer is in charge.



RIGHT TO THE HEART of the PROBLEM

Knitting presents many problems difficult of solution. None perhaps is more vexing than needles which fail to measure up to the requirements essential to quality knitting.

Standardize on Torringtons. Their excellence is as logical as day and night. Every phase of manufacture is based upon the experience of men who have made the fashioning of needles a lifetime work.

Men whose skill is directed along the exacting lines of Torrington precision manufacture.

The result . . . Torrington Needles are alike as peas for uniformity . . . latches are minus loose rivets or rough spots to fray yarn . . . surfaces are satin-smooth . . . and Torringtons are finely tempered. Aren't these the features responsible for fabric quality?

Next month, a further discussion of this problem.

The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

BRANCHES:

THE TORRINGTON COMPANY
CHERRY AND JUNIPER STS.
PHILADELPHIA

C. B. BARKER & CO., LTD.
140-144 W. 22ND STREET
NEW YORK, N. Y.

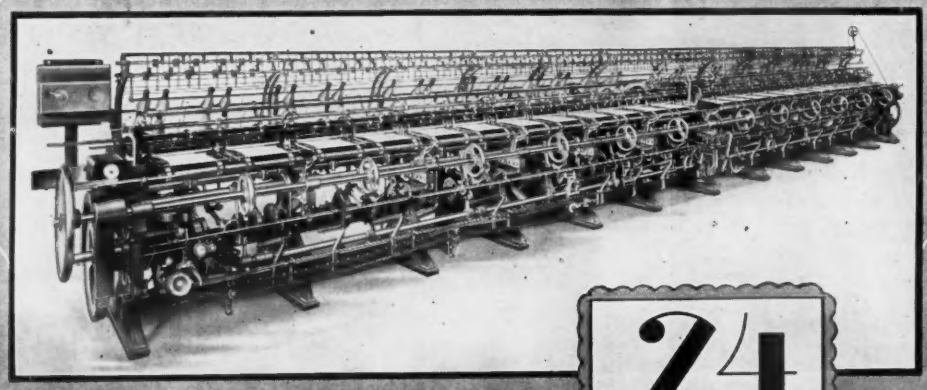
LOS FABRICANTES UNIDOS
964 CALLE BELGRANO
BUENOS AIRES

FACTORIES AT:

TORRINGTON, CONN.
UPPER BEDFORD, CANADA
COVENTRY, ENGLAND
AACHEN, GERMANY

SCHUBERT & SALZER

High Speed Type H·S·L



24 Sections
All Gauges

Higher Production

due to 24 and 28 sections producing at 65 courses per minute—of vital interest to you as a manufacturer

Higher Quality

the finest silk hosiery any machine can produce—of interest to both manufacturers and their customers, the buyers of silk hosiery.

"Ask the man who operates one"

ALFRED HOFMANN, INC.,

West New York · · · New Jersey

Full Fashioned Hosiery Machines

Irregular Stitches and "Crepe" in Silk Hose.

EDITOR COTTON:

We are having difficulty with irregular stitches on 260 needle pure thread silk hose, for ladies, made on a Scott & Williams 3½-inch cylinder machine. The yarn used in the leg is 9-end 13/15 Japan silk, and the needles in this cylinder are No. 90-54. At times we find this irregular split running from one to two inches on an angle with both courses and wales. We find that when the stocking is de-gummed and boarded, this appearance is very much exaggerated and we have not found a definite cause and remedy. This trouble occurs at various places in the hose, sometimes in the foot, ankle or leg.

Also we have trouble, in the same stocking, with a "crepy" stitch, which we must eliminate, and which is shown in the dyed sample of this stocking. This fabric is not knit sleazy, although we can partly correct the trouble by packing silk into this hose; however, we cannot afford to use the additional material in this number. This trouble also occurs at irregular intervals over the stocking. It is not entirely confined to our seamless department, as we find some in our 39-gauge full-fashioned hose, in which an 8-end yarn is used. Our silk yarn is bought through one of the leading yarn concerns of the country and is tested regularly for us by a commercial testing house with the report showing that it is "satisfactory."

We shall very much appreciate having the opinions of some of your readers as to these problems.

CONTRIBUTOR NO. 3032.

Laying Out a Fine Gauge Seamless Hosiery Mill, Also Some Points on Avoiding Seconds.

EDITOR COTTON:

A few days ago a friend of mine who is manufacturing a cheap line of ladies' hose dropped in to see me, and said he was planning to build a new mill to manufacture a line of ladies' fine gauge seamless silk hose, and he wanted to get some data on the subject.

I recalled that my friend Tom Smith down at Pineville had made quite a success of this line, and suggested that he go down and talk things over with him, so he at once decided to go and requested that I accompany him.

We drove down to Pineville and found my old friend Tom still on the job. He gave us a very cordial reception and showed us over his plant. He seemed very happy in his work and there was an air of contentment throughout the plant. We dropped back in to the office and my friend told Tom his business. He began by telling him he wanted to build a modern plant and wanted to get suggestions from him as to how to proceed. Thus the conversation began, and I as a listener-in jotted down some of the questions and answers.

"Have you decided on your equipment?", Tom asked.

"Yes," replied my friend, whom we shall call Jones, "I shall put in three hundred 3½-inch, 260-needle Model K machines."

"Well then," said Tom, "I would engage the services of a competent engineering firm, lay out my machinery plan to them, and let them build a mill around it. I would instruct them to build it light and airy, with proper ventilation, and the best available heat regulating system and artificial lighting system. Give liberal room for the workers, as crowding a worker lessens his efficiency. Make the toilets and dressing room amply large, and conveniently located. Have a sufficient number of drinking fountains well located. All of these things contriubute much to the efficiency of your plant and make an investment that never fails to pay dividends."

"Thank you," said Jones, "but I notice you mentioned automatic heat control. Why go to this expense?"

"A knitting machine," answered Tom, in explanation, "is very much affected by temperature. I believe I would be safe in saying that forty per cent of the menders and seconds caused by short lengths made in the average mill during the winter season can be attributed to uneven temperature. Uniform temperature also lends much to the health and efficiency of the operatives."

Jones then asked Tom for his ideas of a floor plan, as to what size units he would place his machines in, etc.

"Personally, I like 40-machine units, 20 machines on either side of the shafting, driven by a 5-hp. motor," was Tom's reply. "A unit of this size is more flexible and is more adaptable to the operatives than a larger unit."

"Why?"

"It makes the lateral aisles shorter and more accessible to cross-section aisles, which serve for the handling of stock and raw materials, work benches, etc."

We invite our readers to make use of this departmentfor the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any partcular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

"Well, how much floor space should be given to a machine?", was Jones' next question.

"The machines can be set 27 inches from centers, side to side, and 45 inches from centers, back to back, with the drive shaft in the center," replied Tom. "The two lines of machines will occupy a width of five feet, allowing four inches between the edges of the yarn stands."

"Would you dodge the machines so as to run two machines with one pulley?", asked Jones.

"No!", replied Tom emphatically. "I would use a 3-inch face steel split or cast iron split pulley for each machine, and let the machines sit in line in cross section. I would place the pulleys on the shaft, space them with a stick cut the proper length, and then set all hangers so as to dodge all pulleys. When the shaft is erected, you can align the pulleys on the machine with the pulleys on the drive shaft, which will give you a cross-section line of machines."

The next question the visitor asked was as to what diameter pulleys should be used and what height hangers for the drive shaft. Tom said in his opinion nothing less than an eight-inch pulley. "If the pulley is too small," he went on, "it will necessitate taut belts, which is hard on the bearings of the machine and a waste of power and belting." As to hangers, he explained that the minimum height of a hanger is governed by the diameter of the drive pulley. "A 12-inch drop hanger can be used with an 8-inch pulley," he said. "If the pulley used is larger than 8-inch, the belt will drag the belt shipper with the machine set the distance suggested from the shaft, and a higher hanger will be necessary."

This brought them to the matter of belting, and in answer to a question from Jones as to the kind of belt to use, Tom offered the following suggestions:

"The best grade of leather. A good belt put together with a Sawyer belt hook according to the directions on the box should last for five years. The question of belting and oiling machines is a very important one, and too much neglected by almost everybody. A cheap leather belt that stretches narrow and turns up at the edges after a few weeks of running, shifts slowly and does not put enough snap in the machine for the yarn changes, cutter and other parts to function properly. While the belt is running partly on the high speed and partly on the low speed, the machine is knitting a tight streak in the fabric, to say nothing of the loss in production. A few stockings put into waste and seconds will amount to the price of several belts. The right kind of belt will keep a machine running full speed and yet loose enough to slip in a jam and save needles and cylinder walls. As an example of this, we ran two hundred 3½-inch, 240-needle Model K machines for more than six years on two dozen cylinder walls."

"You spoke of oiling," said Jones. "What is your idea with regard to this?"

Tom replied that the machines should be oiled regularly and systematically—"but not the goods and the floor."

"Much more oil is wasted in the average mill than is properly used," he went on. "That means three drops of oil in the oil hole and ten running down on the outside. We use three kinds of oil, a medium-weight engine oil for the frame, a medium weight non-fluid or slo-flo oil for the needle butts, walls, and cams, and a high-grade stainless spindle oil for the latches and sinkers.

"For machines well broken in, one good oiling a week is sufficient for the frame. The needle butts once a day and the sinkers twice a day. We have an oil can with the proper spout for each oil. The correct delivery of oil is important, and oil cans are cheaper than oil. Three hundred machines can be adequately oiled for a year with a total of less than two barrels of oil. The re-dyes will be much less and the floors much cleaner. As for oil in the wick oilers for the yarn to run over, it is all right to fill these about once every two years with a heavy oil that will remain in them, for the psychological effect it might have on some of the fixers, but if the yarns and machine are right, this is a worthless expense."

Jones next asked whether, in putting down machines, it is necessary to level them.

"Yes sir;" said Tom. "Machines will run better and steadier when leveled, and the wear will be more uniformly distributed."

The visitor then wanted to know at what speed a 260-needle machine runs best.

The speed varies according to the style of hose being knit and the number of attachments on the machines, Tom pointed out, "but they should run between 220 and 230 r.p.m. A machine running too slow is just as bad as running too fast, as a sufficient amount of snap is necessary for the movement of various parts of the machine."

"In running pure silk, what is the average needle breakage per machine?", asked Jones.

"With the better grades of yarn, and well trained knitters and competent fixers, the actual needle breakage is very small," Tom answered, "but in order to produce fabrics without lines the needles must be kept in perfect condition. Worn latches, loose latches, stiff latches, worn heads, loose and rough rivets and such defects must be removed which will run the total to about one needle per machine per day."

Jones then brought up the matter of using men or women knitters. Tom said that "with our system of knitting, we find women far more efficient on an average. They are better disciplined, are more attentive to their work and are much more careful with the inspecting. The average girl will see a defect that the average man would overlook."

"How many machines does a girl run, and what are her duties?", Jones inquired.

Tom replied that the knitter's duties are to keep the yarn on the machine, clip the double sole, inspect the hose, and hang the imperfect stocking on the machine that made it. His knitters can take care of sixteen machines each, he said.

Jones then asked about how many machines are allowed each fixer and what his duties are.

"A fixer keeps up forty machines," replied Tom. "He inspects all the menders the knitter hangs on the machines, makes all the repairs on the machines, puts in all the needles, cleans the cylinders, oils the machines and fixes the belts."

"Couldn't you effect a saving by using a cheap helper for such unimportant work as putting in needles, cleaning cylinders, oiling machines and fixing belts?", inquired Jones.

"You're wrong," declared Tom. "These are very important jobs and prevent what you might term important jobs. The fixer who puts in the first broken needle and removes the cause prevents the impending wreck, and while he cleans the cylinder, he removes the defective sinkers, needles and jacks, works over the cams, and sets up the cylinder in

the best possible alignment, which reduces seconds. Proper oiling requires skill, while the correct tension of the belt protects the machine from wrecks and keeps production at a maximum. A good fixer will find that all of these things will consume only about half of his time and he can spend the remainder of his time looking for little defects in the hose which might pass the average inspection but if eliminated would improve the quality."

Jones next asked, "Operating on this basis, what will the waste and menders run?"

"The waste should run from one-half to one pound per day to a set of sixteen machines. The menders should run from three to four dozen a week. One good operator will mend the menders from 250 machines. We put all menders that are found in the silk leg in the waste, and all the menders in the cotton part of the hose which will not make an *A* grade second when mended. The back-wound yarns show greater value than No. 2 seconds."

Pertinent Points on Seconds.

"Then what will the seconds run?", asked Jones.

"Seconds from all causes throughout the plant should not exceed four per cent," answered Tom.

"What!", exclaimed Jones. "Why, you'll make half that amount from short lengths, won't you?"

"Not if you have one sizing man who is thorough in his work, to do all of the sizing, so you can place the responsibility," declared Tom. "Every time a machine is knitting too loose or too tight it doesn't mean the tensions should be changed. There are causes too numerous to mention, which you are familiar with, which will affect the length; and the efficient sizer looks for the cause and removes it. A trained knitter will detect any appreciable variation in the length of a stocking and report it to the fixer. A fixer who is working for results will always size a machine before leaving it, after making any adjustments on parts which will affect the stitch. I repeat, an efficient organization will keep seconds to four per cent."

I knew this question of seconds was Tom's particular hobby, and I could tell that we were slated for an interesting discussion of it.

"The subject of seconds is one that interests me very much," he continued, and I could tell he was warming up to it. "It should interest every manufacturer. Seconds are the pulse of the whole organization, and the condition of the body is detected by the pulse. If a manufacturer is making six per cent more seconds than he should make, and his production is 1,000 dozen per day, he is losing $120 a day, because of the six per cent excessive seconds.

"There is always a cause for this excess, and $120 a day expended in the right direction will run down the cause and correct it. When I see such a wanton waste from this source in some of the plants, I am amazed. Why you know, there is an army of bargain hunters who happen to belong to the same race as the wisest man, King Solomon, running around over the country picking up these second bargains and getting rich because of our inefficiency and stupidity, and it should be stopped! We all ought to hang out our shingle on the mill door, 'No second bargains for sale. We've discontinued this line.'"

"You're right, Tom," I agreed. "Now suppose you tell us some of the causes for all of these seconds." I knew this would keep Tom going on the subject, and, lighting up his trusty old pipe, he replied. "They are usually the little things that are neglected or go unnoticed. To be sure, you must have your raw materials right to begin with, or you absorb the defects of the manufacturers who make the raw materials. As an example of this, some time ago we bought a couple of cases of 80s/1 mercerized splicing yarn, because we thought it was a bargain, at $1.55 per pound, when the prevailing price was $1.60. We only used 3/4-ounce to the dozen of this yarn in the silk number we were making. When we got our complete reports of increased waste we found that it had cost us $3.00 per pound instead of $1.55.

"You can have '$100 splinters' scattered over the mill, on the sewing and looper tables, and on the backs of chairs, etc. I call them '$100 splinters' because they will pull threads in enough silk stockings in a short while to cost that amount. Then you can have quite a number of '$100 screw heads' which have been burred by the fixer using a fifteen-cent screw driver half the right size to turn the screw.

"Then again, sometimes you have some '$50 tin boxes' under the knitting machines, where the mitered corners don't fit just right, and a single drop of solder would correct this.

"I could mention dozens of other causes that you are familiar with, but there is just one other which might interest you. That is the question of mending. It has been the custom of most mills, ever since I can remember to use the old ladies, who were unfit for anything else, to do the mending—or I should say sewing up—and because they would work cheap, a low piece work rate is set on this operation. Now this is all wrong. Mending, if done right, is one of the most difficult operations in the plant, and requires skill, the best of eyesight, the best of nerves, and it should be paid for on this basis, using the best of help, not on a piece rate basis, but day rate, so the mender can give the job the time required to do good work. An old woman will sew up about thirty dozen menders a day while a mender will mend from eight to twelve dozen per day, or an average of ten dozen. If you take ten dozen from the thirty-dozen lot and compare it with the ten dozen of the well mended lot, you will find about this comparison: Poorly Mended: 1 dozen firsts, 4 dozen A grade seconds, 5 dozen B grade seconds. Well Mended: 5 dozen first, 5 dozen A grade seconds. The difference in value of the two lots is about $15, so you can readily see that there is an economy in the more expensive operation."

At this point it was necessary for Jones and me to go. We expressed our appreciation to Tom for his courtesies, and promised to pay him another visit at some future time. When we do, I'll tell you and the readers of "Knitting Kinks" about it.

T. O. (N. C.)

Speeds, Tensions, Wool Yarn, and Overhauling.

EDITOR COTTON:

I should like to get the experience of some of the readers as to the procedure and cost of overhauling machines that have been in use for a period of time. By whom is this work done? Where is it done in the mill and what equipment in general is needed besides the parts, to accomplish this result? This question does not relate to any particular hosiery machine, but any machine that produces hosiery.

Also, I should like to know what methods are used on the machine to get the smallest per cent of waste on a hosiery style made of wool yarn. The writer has been having considerable trouble on the Scott & Williams K

machines, 220-needle, with the wool yarn pulling out of the fingers while knitting. As wool yarns of fine count pull apart very easily, I find it difficult to keep the waste per cent down. What methods are used on the machine for keeping this trouble to a minimum?

I would like to get some illustrations of yarn tensions that have proved from experience to get results on the knitting machine. There are many tensions on the market for this purpose, but there are some home made ones that would be of benefit to many of us if we only knew what they are.

What are the proper speeds of hosiery machines to get results? Every hosiery manufacturer has found his own speeds at which it is best to run his machines. The writer would like to get an answer to this question from any type of hosiery machine, taking into consideration the diameter, gauge and number of needles.

CONTRIBUTOR NO. 1004.

A Convenient Table for Knitters.

EDITOR COTTON:

We have recently designed and had built, a very convenient knitter's table for use in our full-fashioned department, and since it has worked out to be so handy for our mill I thought you might like to have a description of it to pass along to the other full-fashioned mills, particularly those who are getting under way in the South, because I know how difficult it is to get into this game and for that reason I though some suggestions of this kind might be of some possible help to these men.

The table is patterned to a large extent along the general lines of some of the commercial tables, although we have made two or three changes which we consider to be advisable. A front view of the table is shown in the accompanying sketch. The table is 36 inches wide by 40 inches high, by 16 inches deep. At the bottom we have left an open space across the width of the table where the knitter can put his shoes in changing to those worn in the mill, as well as any other packages or articles he may desire to keep in the mill. Just above this is a drawer extending across the width of the table.

You will note the section next above consists of two cabinets with hinged doors. Inside of these two cabinets we have placed metal pans containing water, which are covered with a perforated metal cover, and the winder hand brings the wound cones of silk yarn and places them in this cabinet or humidor where they are kept moist until the knitter comes and gets them for use on the machine.

The table or bench is designed for the use of two men on the day and night shifts, and at the top of the table are two sets of two drawers, one set on the right and one on the left. The top one on the right is used by the day knitter, who keeps his tools, etc., in it and the lower one is used by him for keeping his waste. The night man uses the left hand drawers for the same purpose.

In the top of the bench we have inset a regular yard stick divided in inches which constitutes the front edge of the table top and is used for checking up on lengths of hose.

The stand on which the knitter places his knitted stockings we have extended above the top of the table in the manner shown. This keeps the work sufficiently high off of the floor so that it does not drag or accumulate dust and makes the stockings easily accessible to the time keeper who checks up on the knitters' reports.

We had the benches made at a local wood working plant. We used a birch wood for the top of the table and the rest of it was made of poplar, stained, shellacked and varnished.

CONTRIBUTOR NO. 3014.

An Interesting System of Inspection.

EDITOR COTTON:

We have at our plant a system which may interest some of the readers of your "Knitting Kinks" discussion department. It pertains to the method of inspection which we use in our hosiery knitting and looping departments, and a plan we have for classifying the work done by our loopers and first inspectors.

I say "first inspectors" because, as I might explain here, we have inspectors to inspect the work and mend after it leaves the knitting machine, and then another set which inspect the goods following the loopers, and these latter inspectors make out the reports, which cover not only the loopers but serve as a check on the first inspectors.

As indicated, we have a grading system on the work done. For the loopers, the sheet "Looper's Weekly Report" is compiled from a daily sheet which is similar. This is shown in Fig. 1. The inspectors grade according to the schedule or classification shown on the card which is inset in Fig. 1 with the sheet. The looper's number or name is placed at the left-hand side. Then her weekly average grade is entered under the proper letter, according to the classification. It will be noted that "E," meaning Excellent, has a limitation of one bad stocking to five dozen; "G," (Good) means one bad stocking to four dozen; "F" (Fair) means one bad stocking to three dozen; "P" (Poor) means one bad stocking to two dozen; and "U" (Unsatisfactory) means one bad stocking to one dozen. Then the number of stockings going into waste is shown. The

LOOPERS WEEKLY REPORT

Week Ending _____ 192____

Looper's No.	E	G	F	P	U	W	B	P
Total								

1 Bad Stocking to 5 Doz. Exc.	1 Bad Stockings to 4 Doz. Good	1 Bad Stocking to 3 Doz Fair	1 Bad Stocking to 2 Doz Poor	1 Bad Stocking to 1 Doz Unsatisfactory	Number Waste Stocking	Exc. Bonus ½ c	V Penalty ½ c
E	G	F	P	U	W	B	P

INSPECTORS GUIDE CARD

FIG 1

INSPECTORS WEEKLY REPORT

Week Ending _____ 192____

Inspectors No.	E	G	F	P	U	W
Total						

1 Hole to 6 Doz. Exc.	1 Hole to 5 Doz. Good	1 Hole to 4 Doz. Fair	1 Hole to 3 Doz. Poor	1 Hole to 2 Doz. Unsatisfactory	No. Waste Stockings
E	G	F	P	U	W

INSPECTORS GUIDE CARD

FIG 2

last two columns, headed "B" and "P," mean Bonus and Penalty, respectively. In other words, if a girl averages Excellent for the week, we pay her a bonus of one-half cent. However, if she averages Unsatisfactory, she is penalized a half-cent from the regular rate. If she shows up Unsatisfactory for three succeeding weeks, this record is equivalent to discharge—and she knows it.

The "Inspector's Weekly Report" and its classification card is shown in Fig. 2.

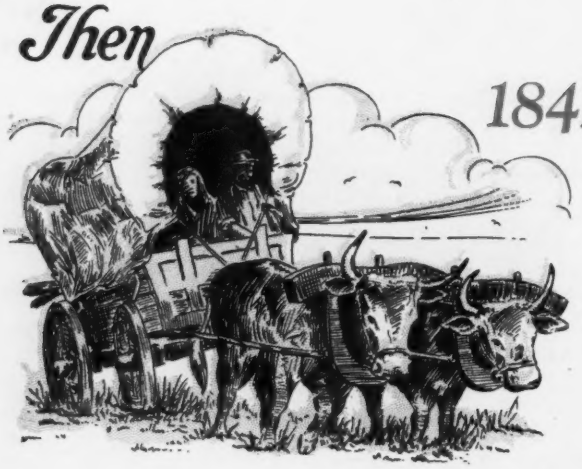
While no penalties or bonuses are used so far as the inspectors are concerned, practically the same system of grading is used, except the limitations are more lenient. That is, on this report, "E" means one hole to six dozen; "G" one hole to five dozen, etc.

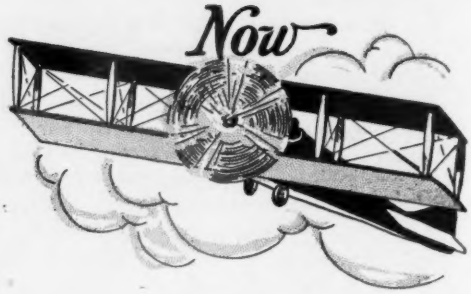
We find this a mighty helpful arrangement. By adding up each column or classification, we can tell, out of the total number of stockings knit, just how many are going into each classification. CONTRIBUTOR No. 1014.

Causes for Crepe Appearance on Silk Hose.

EDITOR COTTON:

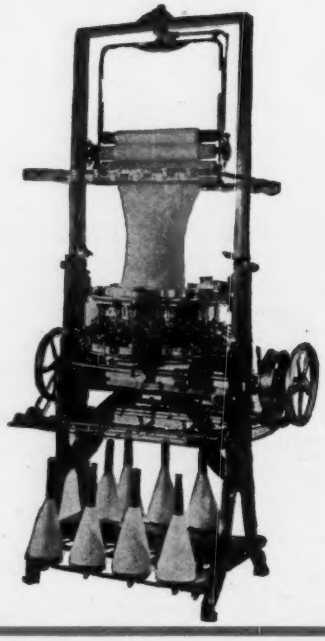
In the November number "L. B. (N. C.)" indicated that he is having trouble with crepe appearance in full-





New
18-20
Model

Multiple Feed
Circular Rib
Spring Needle
Cooper Knitter



The New 18-20 Model Cooper Multiple Feed, Circular Rib, Spring Needle Knitting Machine with Stop Motion, specially designed to Knit Silk, Artificial Silk and Rayon Yarns. This new model is now perfected and samples of fabrics produced from this model will be sent upon request.

Oldest Makers of Spring Needles in the United States

From a hand-made, sparsely produced needle, the Cooper Line of Spring and Latch Needles has grown with the textile industry into the most complete in the United States. As the first manufacturers of Spring Needles we have retained a life long prestige—accounting for the fact that Cooper is to Needles what Sterling is to silver.

Charles Cooper Co.

Machine and Needle Works

Bennington, Vermont, U. S. A.

G. H. ROGERS, Traveling Representative, 877 Warren St., Albany, N. Y.
C. C. KELLEY, Sales Manager, 121 East 24th St., New York City
J. A. WILLARD CO., INC., Southern Representative, Greensboro, N. C.
Agents: MELLOR, BROMLEY & CO., Ltd., LEICESTER, ENGLAND.
ELBROOK, INC., 50 Peking Road, Shanghai, China, Agents for China and Japan.
M. BUCHSBAUM, Calle Alsina 1814, Buenos Aires, Argentine

fashioned hosiery. It is entirely probable that this is caused by using silk reclaimed from backwinding imperfect hosiery.

Silk from backwinding, coming from the knitted fabric, has in it a tenacious kink which is hard to remove, especially when the hosiery to be backwound has been left for some time. When this is knitted again it has a tendency to curl back, producing the crepe appearance of which he complains. The fact that he says the trouble is apparent only in hosiery dyed light shades and not in the black may be only a coincidence. He may try some time and knit a stocking or two with backwound silk and dye them black just to see the result.

If "L. B." will leave the cones with the backwound silk on them for a little time in a conditioning cabinet with a maximum amount of moisture to give the kinks a chance to straighten out, I believe he will be relieved of that trouble. W. D. (TENN.)

EDITOR COTTON:

As a reader of "Knitting Kinks," I would like to offer "L. B. (N. C.)" some suggestions to help him remedy his crepe appearance in full-fashioned hosiery.

As he said he is almost certain that the crepe appearance is not caused by dry silk, I do not quite understand whether he means by silk too dry before knitting or too dry after it is finished. If I could have a look at a stocking with a crepe appearance I believe I could tell better what the trouble is and give more accurate advice.

However, I will suppose that he means the hosiery with the crepe appearance has the look of being devoid of the lustre and brilliancy that is natural when silk is processed in the proper way.

The silk crepe effect is obtained by weaving silk that is thrown with a very hard twist which in the process of boiling off and dyeing crinkles up and shrinks and after dyeing is stretched to the desired measure in a tentering machine, giving the goods a beautiful feel and a subdued lustre. The harder the twist the more the lustre is subdued. Maybe "L. B." used silk thrown with more twist to the inch than tram for hosiery knitting needs.

But I am inclined to believe that his trouble may be found in his boiling off. Silk is the most lustrous material fiber in existence. The most important thing to do in processing silk goods is to bring out this natural property of silk to the highest degree possible.

Boiling off is considered the most important initial operation for successful dyeing of silk. It influences the physical property of the finished product; the feel, the lustre and the wearing quality, and in spite of that, there is not a general agreement on the best method to accomplish it. Each dyer of silk has his own pet method, and each believes his way is the best.

All successful dyers, however, agree on one point, and that is it must be done properly, in the shortest possible time and with the best ingredients obtainable.

Soap is the best medium. Other chemicals and some sulphonated oils can be used as an aid, but should not replace soap altogether.

The boiling off must remove from the raw silk the sericine, which is a gum covering the silk thread for its protection; the oils and lubricants used by the throwsters and the knitters; also all other impurities and dirt picked up by the goods in the process of operations.

The selection of a soap of good quality, then, is very important. It must be free from caustic and hard fatty substance, and it must be easy to wash out of the goods.

I had some dyers tell me they had to boil silk for three hours in order to remove the gum and the oils from their goods. That is outraging the silk. No silk can stand that long boiling and come out in good shape. The sericine that covers the silk thread will swell up after a few minutes' immersion in a hot soap bath and dissolve quite readily after swelling. One per cent of soda ash or its equivalent of some other detergent should emulsify the oils quite readily in the same time. When silk goods are exposed the full width, like in piece goods or skeins, in the vats, one-half or three-quarters of an hour is all that is necessary, according to the thickness of the material. In boiling off silk hosiery, which is usually done in nets, the boiling is carried on a little longer, but it should not take any more than one hour to do it right.

When boiling to extremes, like those dyers I mentioned, this is what happens. When the sericine and all the other impurities are discharged from the silk, they are dispersed in the soap bath. When the bath is freshly prepared it looks clear and transparent, but after the goods have been boiled in it a short while the appearance of the bath is muddy. If the goods are taken out as soon as it is reasonably sure that the boiling off is completed, and promptly washed out thoroughly with warm water, the silk will be found to be in the best possible condition for dyeing, but if left in this muddy bath boiling for an unreasonable time, or left unwashed for any length of time, the silk will take up again some of the impurities that are in the bath and acquire a dull appearance, very difficult to remove afterwards.

If it is deemed necessary to carry on the boiling longer for good results, as in the case of heavy goods and threads, it can be done by first boiling a short time in a soap bath to remove all the gum and surface impurities; then transfer in a clean soap bath and finish the degumming in this second soap.

It is also possible that the trouble "L. B." has is caused by using the wrong material in finishing, or too much of it.

The demand of the public being for finer and sheerer goods, and the manufacturers finding it difficult to board properly this flimsy hosiery, there is a tendency to apply to the goods in the last finishing operation, some kind of a filling designed to stiffen the hosiery somewhat.

There are a number of preparations sold to the trade for this purpose. It is very difficult to select a good filler that will answer equally well on different fibers. What may be excellent for cotton may be worthless, or even injurious, for silk. A good finish should have the property of increasing the stiffness of the material and at the same time making it pliable so that when it is dried in the goods, on crunching tight in the hand, will not leave creases and waves. The selection of a good finish is the work of an expert. Something on the order of a commercial product known as glyco developer can be used in as much as 5 per cent and still leave the goods soft and pliable without impairing the lustre of the silk.

If any of the foregoing suggestions will help "L. B. (N. C.)" I will consider the time taken in writing this well spent. D. N. (TENN.)

This is your department. Use it.

The Yarn Market

Philadelphia, Pa., January 16th, 1928.

The Philadelphia cotton yarn market, during the past month or four-weeks period as it is reported here, witnessed some more or less major developments, some of which tended toward improvement. Generally speaking, however, there was no wholesale improvement in interest, but on the other hand, certain of the tendencies had the effect of placing the market upon a much better plane for future developments.

The first week of the month preceding this writing ushered in a broad feeling of a better confidence among the selling fraternity in the market. This was the week preceding the Christmas holiday period, so that there was a natural slackening in interest and activity on the part of all factors. At the same time, a moderately broader inquiry for yarns in the carded group was noted. The selling element manifested a better feeling. With cotton at an apparent low point in its fluctuations, it was felt that yarns also were due for improvement. Spinners held firm in their price attitudes, and toward the end of the week, just before Christmas, there were slightly better rates secured for some of the more popular carded numbers. A noticeable increase in interest and business from knitting mills was evident.

During the second week, the optimism and confidence engendered before Christmas continued and expanded. Cotton was in an excellent position, and with obviously small profits figuring in the selling prices, spinners increased their rates, with dealers immediately meeting the upward revisions, which, for carded weaving yarns meant about a half a cent a pound, and twice that on these yarns for the knitting mills.

Actual demand and orders placed were not increased materially by the stronger position taken by the spinners, and there was comparatively little interest manifested in deliveries beyond January. It was necessary for the yarn users to determine the potentialities of their own markets. Some dealers held that the increase just mentioned had been made too rapidly, as in some cases, spinners' quotations were up as much as three cents above the level of ten days previous. This, however, came about largely as a result of the spinners' confidence, and they still feel that the next few weeks will uncover some surprising activity among buyers. But, regardless of the immediate situation, all factors were in accord in approving the action, instigated by the Cotton-Textile Institute, Inc., through its carded yarn group, which resulted in a voluntary curtailment among the mills, affecting a considerable proportion of the productive capacity. This movement was undoubtedly an important element in the new attitude of the yarn makers. It resulted, also, in the withdrawal of much low-priced stocks in this market, in the anticipation of higher values, and was considered certain to improve the business of the new year.

Yarn strength held up during the next week, which ushered in the year 1928, on the basis of the curtailment program and a strong cotton market. The actual business placed naturally would not be large, but it was not up to the anticipations of the sellers, and was not of a sufficient quantity to establish the higher price levels at once. There was a considerable scramble of prices, caused by individual efforts to secure business, with weaving yarns appearing in better immediate demand than those counts for the knitting mills. On the whole, however, the market began the new year with the general impression that the first quarter thereof would witness an encouragingly active buying movement among a large number of the market's customers.

Last week saw some increased attention paid to the combed groups in the yarn list, with two-ply combed peeler skeins exhibiting the most activity. There was an improved demand at prices giving a smaller margin of profit than was realized on these yarns a year or so ago. At the same time, it did not seem that the prices secured could be considered satisfactory to the majority of the buyers or sellers. Carded yarns had a quiet week, but it was hoped that the expected rally in cotton would serve to help things in this connection. The latter part of the week found demand in the combed groups slowing up, since apparently the larger processors did not come wholeheartedly into the market. The carded spinners continued to be bullish on cotton, refusing to accept much business for the long future on the prevailing low price basis.

Philadelphia quotations on January 14th follow:

Single Skeins.

4s to 8s	31	10s	31½
12s	32	14s	33
16s	33½	20s	35
24s	37	26s	38
30s	39½		

Single Warps.

10s	32	12s	32½
14s	33	16s	34
20s	35 @35½	26s	39
30s	40½	40s	49½

Carpet and Upholstery Yarn in Skeins.

8s 3-4 hard white warp twist	32
8s and 9s tinged tubes	29½
8s 34 hard twist waste	27½

Two-Ply Skeins.

8s	31½	10s	32
12s	32½	14s	33½
16s	34	20s	36
24s	37½	26s	39
30s	40½	40s	48½

Two-Ply Warps.

10s	33½	12s	34½
14s	35	16s	35½
20s	36½ @37	24s	38½
26s	40	30s	41½ @42
40s	50		

Frame Spun Carded Yarn on Cones.

8s	31 @31½	10s	31½ @32
12s	32 @32½	14s	32½ @33
16s	32½ @33	18s	33 @33½
20s	33½ @34	22s	34 @34½
24s	36 @36½	26s	37 @37½
30s	39 @39½	40s	47½
30s double carded	41 @41½	32	
30s tying in	37 @37½	29	

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	44	20s	46 @47
24s	48	30s	51 @53
40s	57 @59	50s	62 @63
60s	68 @71	70s	79 @82
80s	89 @92		

Single Combed Peeler Yarn on Cones.

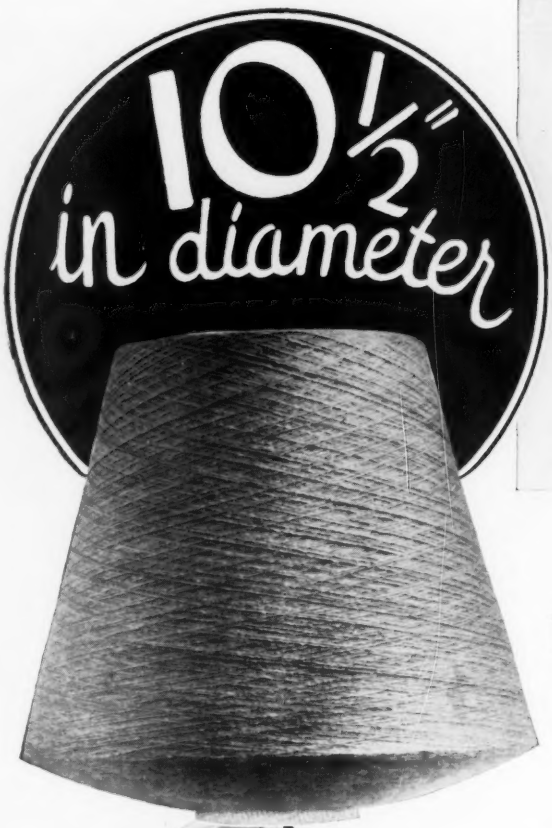
18s	42	24s	44
30s	50	36s	53
38s	54	40s	55

Mule Spun Carded Yarn on Cones.

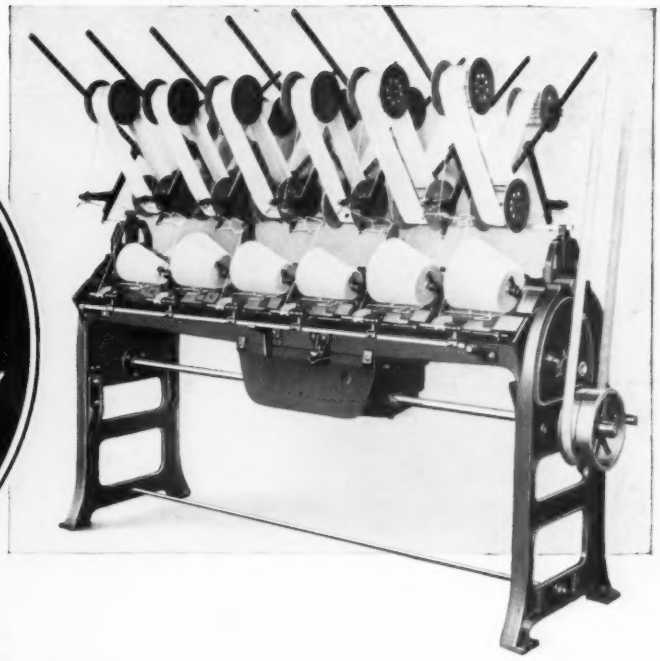
10s	36	12s	36½
14s	37	16s	37½
18s	38	20s	38½
24s	39½	26s	40
30s	42	40s	52

Mule Spun Combed Peeler Yarn on Cones.

10s	45	12s	46
14s	47	16s	48
18s	49	20s	50
22s	51	26s	53
28s	54	30s	59
36s	60	40s	64
38s	61		



Further details of the No. 180 are given in the circular illustrated above. A copy will be forwarded to you, if requested on business stationery.



UNIVERSAL NO. 180 SKEIN-TO-CONE WINDER

THE Universal No. 180 skein-to-cone winder produces a cone with a maximum diameter of 10½ inches, the largest concentration of yarn known to the sweater manufacturing industry.

This larger cone is of great value to mills running automatic machines on extensive orders. Of course, if the order in process is small, the size of the cone can be reduced to meet the requirements.

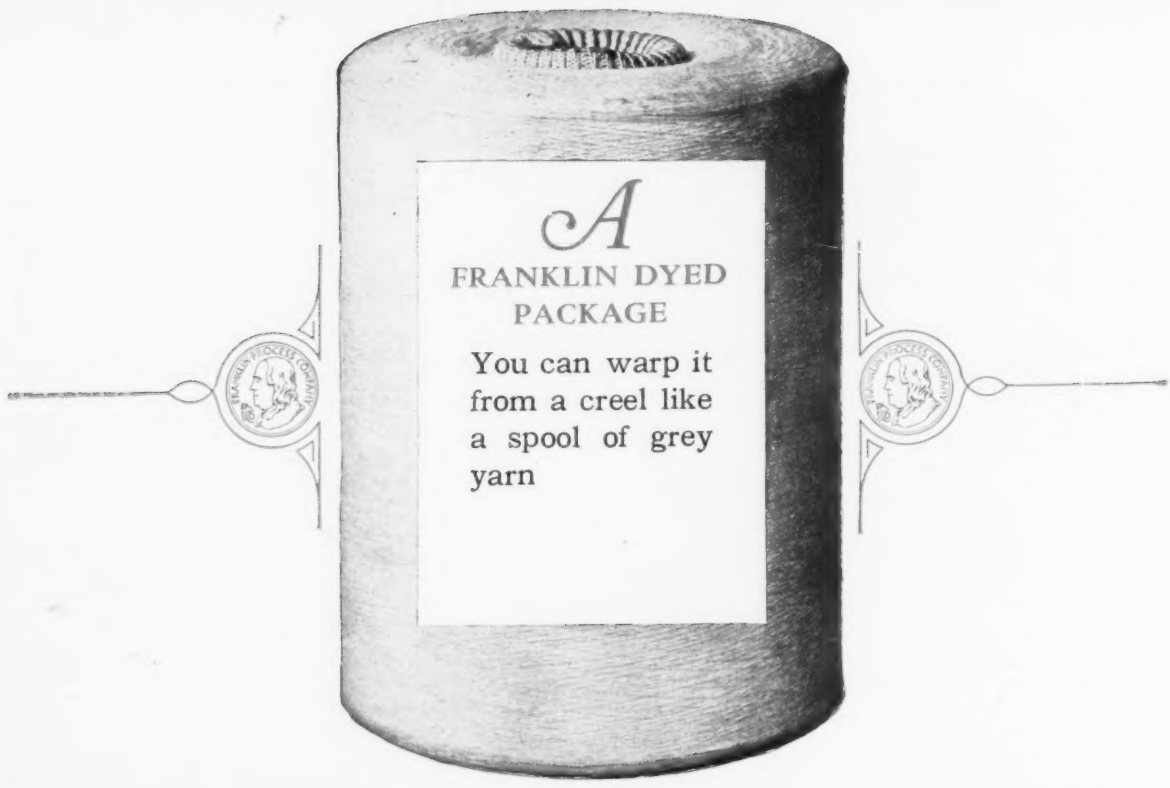
Another important feature of this machine is the delivery of the skeined yarn from runner attachments to the winding spindle. When the yarn is delivered from these overhead runner reels, tangles release themselves, breakage is reduced to the minimum, and the ideal package for feeding the knitting machine is produced at maximum speed.

LEESONA

UNIVERSAL WINDING COMPANY

PROVIDENCE BOSTON PHILADELPHIA
CHICAGO, UTICA CHARLOTTE
NEW YORK MONTREAL AND HAMILTON, CANADA ATLANTA
DEPOTS *and* OFFICES *at* MANCHESTER *and* PARIS

UNIVERSAL WINDING



Are You Rejecting a Time-Tested Manufacturing Operation?

WARPING grey yarn from spools in a creel is a time-tested manufacturing operation. No more economical method of getting yarn onto section beams has yet been devised. Is it not just as economical to warp dyed yarn? Yarn is yarn whether colored or in the grey.

Beaming was originally practiced because yarn had to be dyed in the long chain before the invention of the Franklin Process. Now yarn dyed in the Franklin Package form can be warped from a creel just like grey yarn, for the Franklin Package is in reality a spool.

Are you one of the few who still do not use Franklin Process Yarn Dyeing Service? Are you rejecting the warping of dyed yarn, a time-tested manufacturing operation, in favor of beaming, a method used in the past, of necessity, and not because it was ever considered an economical operation? You know what it costs you to warp grey yarn, also what it costs you to beam dyed yarn. Compare the two figures, and the difference is part of what you will save in winding costs by using our service.

In addition you will save one operation before dyeing,— ball warping. And you can discard your ball warping and beaming machines and cut down your number of employees accordingly.

Is it strange that users of Franklin Process Service report savings of 5 cents per pound or more in winding costs? Why not investigate now? A letter to our nearest plant will bring you complete information,— no obligation.

FRANKLIN PROCESS COMPANY

Dyers of cotton, woolen, worsted, jute, hemp and linen yarns and silk noils, also yarn spinners and manufacturers of glazed yarns.

OFFICES

Main office and plant
Providence, R. I.
Branch plant at Philadelphia

New York Office
66 Leonard Street

Southern Franklin Process Company
at Greenville, S. C.

Central Franklin Process Co.
Chattanooga, Tenn.

FRANKLIN PROCESS

Commission Dyeing of Yarn in the Wound Form

The Knit Goods Market

Some unnecessary confusion over primary market prices for hosiery was precipitated by the reductions announced by the Julius Kayser Co. at a time when New Year's greetings were being exchanged. Although there was a reduction of but a dollar a dozen for the company's higher price lines, the revisions being graduated down to 25 cents a dozen for popular price goods, the changes came as a surprise and for a time had the effect of leaving the market unsettled.

Something of this kind was looked for in the trade, but not from this particular quarter. A cut by another mill, which made several rather startling reductions in the last two years, would have occasioned no surprise. This mill is adhering to last year's prices, and it is believed most manufacturers are doing the same thing. But it seems not improbable there will be offered enough low price full-fashioned silk hose to keep the markets somewhat disturbed during the spring distribution period.

It develops that some few manufacturers, disavowing any intention to revise prices, have made changes in certain numbers whereby they have reduced the cost, the difference being passed to distributors, usually retailers. One of the misfortunes of the reductions is that they are too narrow to reach the consuming public, so that it seems hopeless to look for increased consumption because mills are getting less for their product.

It is pointed out in the trade that, while manufacturers in the North credit competitors in the South with having a lower operating cost, southern mill prices have shown more firmness, generally speaking, than have those of northern mills, this applying more particularly to those selling their branded lines direct to retailers. Just why downward revisions are necessary for stimulating sales is not apparent to close observers.

Two of the better known large full-fashioned mills are sold well ahead, at 1927 prices. They are the Berkshire at Reading and the Apex in Philadelphia, mentioned for illustrating a point. Numbers of the smaller and younger mills are relatively well supplied with orders. The Howard, in Philadelphia, for example, reports production of 42-gauge all over silk sold to March and some business booked for April. At least two mills in Reading, in a class with the Howard so far as relates to output, are operating 16 to 20 hours a day, as they have been for some time. One of these is the Traymore and the other the Reading Full-Fashioned. Neither makes chiffons, seven and eight thread being their sole numbers. The Howard makes chiffons only. All sell to jobbers. Being representative in their respective classes, conditions with them may be said to be typical of those in most mills operating 42-gauge equipment and selling to jobbers.

The jobber mills referred to shut down for only two days during the holiday period. At least five Philadelphia mills selling direct to retailers gave operatives a 10-day vacation, and one laid off some help for 30 days. The disparity in situations as between the two classes of manufacturers might be attributed to activity among jobbers and the disposition of retailers of branded lines bought direct to clean up their holiday leftovers before doing any buying other than to fill in broken assortments. That this is the explanation seems indicated by the fact that later in January retailers resumed the placing of new business and regular schedules were restored in the mills.

While the price situation is not wholly satisfactory, most interests anticipate a brisk Spring in silk hosiery, and that jobbers take this view is evidenced in the orders booked by numbers of leading mills. It has come to be questioned whether retailers have not so abused the ready-to-ship service maintained by mills selling direct that the more satisfactory outlet for manufacturers is through wholesale distributors. An upstate Pennsylvania manufacturer answers the question for his establishment by stating the department maintained for selling direct is to be discontinued and that hereafter he will sell to jobbers only, after pleasant relations with a number of distributors.

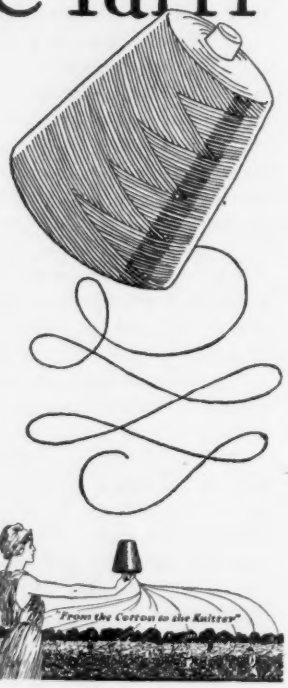
Collections from retailers, the management say, are slow, accounts often running for 90 to 120 days, notwithstanding terms are 60 days. One bookkeeper is kept busy with monthy statements to the delinquents. All of the mill's jobber accounts are settled within 30 days, most of them in 10, for taking advantage of discounts, and monthly statements in this department are practically unheard of. There is involved more bookkeeping over one case of hosiery sold to retailers than 20 sold to jobbers, it is stated. "Our jobber customers may have all of our retailer accounts and we would thank them for taking them over," said an executive.

There appears a considerable element among retailers whose accounts are not solicited by either manufacturers or jobbers, except under iron clad regulations imposed by sellers and frequently on only a strictly cash basis. It is this element that caused manufacturers recently engaged in selling direct to discontinue that method of distribution. Those who are well established, while having to meet many perplexities, prefer it to distribution through jobbers, and even some of the smaller concerns are having a most satisfactory volume of business. The Busy Bee mill, in Reading, for example, after having several times increased its equipment, is, and for some time has been, operating day and night—a solid 24 hours—and is buying certain numbers in the gray from other mills. Thus, it is shown, there is well sustained demand for full-fashioned hosiery, and there appears little reason for expectation of price cuts.

At least two mills in which operations were interrupted by strikes in January were supplying their trade with hosiery bought from manufacturers whose plants appear immune from labor disturbance. A strike in a mill near Philadelphia, in which an extra hour's work a day at straight pay per dozen was the issue, was adjusted under an agreement with the organized knitters which permits practically what the management had been contending for. The agreement is effective for only six months. During that time, it is the hope of manufacturers and the knitters' union, differences now existing will be ironed out and a controversy involving Philadelphia mills be averted.

Each of a half dozen or more manufacturers in Phila-

Hosiery Quality Begins With the Yarn



The lustre and sheerness which you prize in your finer grades of cotton hosiery are entirely dependent upon the yarns that go into them.

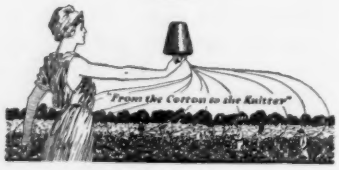
That you may be absolutely sure of obtaining these qualities in all of your merchandise, we have perfected all mercerizing and spinning processes to the point where the same unusual fineness, strength and evenness is produced each time.

Whether your order be for 16s, 80s, or anything in between, you may be absolutely sure that in every case the yarns will meet in every detail the uses to which they will be put!

Prompt deliveries . . . always!

AMERICAN YARN & PROCESSING CO.

Mount Holly, N. C.



Sales Representatives

H. B. Robie,
93 Worth St., New York

G. M. Hamilton,
1263 Pratt Ave., Chicago, Ill.

E. L. Hicks,
904 Washington St., Reading, Pa.

David Whitehurst,
409 Parkway, High Point, N. C.

Louisville Textile Co., Inc.
Louisville, Ky.

H. D. McDonald,
924 James Bldg., Chattanooga, Tenn.

H. B. Ketchum, Mgr., Export Dept.,
Room 1041, Cunard Bldg.,
25 Broadway, New York.

G. C. Ellis,
Fairleigh Crescent,
Hamilton, Ont., Can.

delphia had planned to put the open shop plan in effect in January, but none did so on the dates designated, and at present writing it seems the disposition is to let the other manufacturer take the initial step. This may be attributed to the fact mills are getting business and hesitate to make any change that might interfere with production. While it seems a certainty a lower scale of wages will be reached eventually, any drastic revision of present rates is likely to be deferred so long as prices in the primary markets remain about where they are.

Competition among manufacturers of low price full-fashioned hose has reached a stage where it seems safe to forecast a dollar stocking as a general commercial proposition. A 36-gauge silk to welt is offered to retailers by at least one mill at $8.25 a dozen, a price which puts it in the retail dollar bracket. It is known that several manufacturers contemplate putting on the market a type of construction adapted to that bracket. The chief difficulty encountered seems to lie in the fact that very high grade seamless, with pointed heel, is available as a dollar stocking, and that in point of fabric it appears a better stocking than it would be possible to produce on full-fashioned machines as a dollar seller.

According to manufacturers of seamless silk hose, they are convinced that if stores would push seamless a considerable part of the consuming public would use it. But, says a mill executive, "we seem to be unable to get by the store buyer. Salesmen offering seamless hose have difficulty in obtaining an audience with a buyer. We have, to some extent, made entree easier by offering a line of full-fashioned, which we have made elsewhere to our specifications. Sometimes, after the salesman has talked full-fashioned, he gets an opportunity to present his seamless line, and we have succeeded in putting it into some stores which have carried only full-fashioned. Only by using one as the entering wedge for the other can we get the attention of buyers who are set in their notions."

The Kitzmiller mill, in Reading, as previously announced, is exploiting a very fine gauge high finish silk stocking that does not have the seamed leg. Shown on models, it is said to have made a favorable impression. During the holiday shopping period, it is stated, this stocking without a seam was shown side by side with a mock fashioned priced a dollar a pair, and that while sales of the latter amounted to 1500 pairs, approximately 1000 pairs of the plain were sold, at a price slightly in excess of $1.50 a pair. The company is enthusiastic over this showing and plans to wage an active campaign in behalf of the true seamless. To others it seems like pulling against the tide, and for the present the Kitzmiller mill will have to itself the new field which it has undertaken to create.

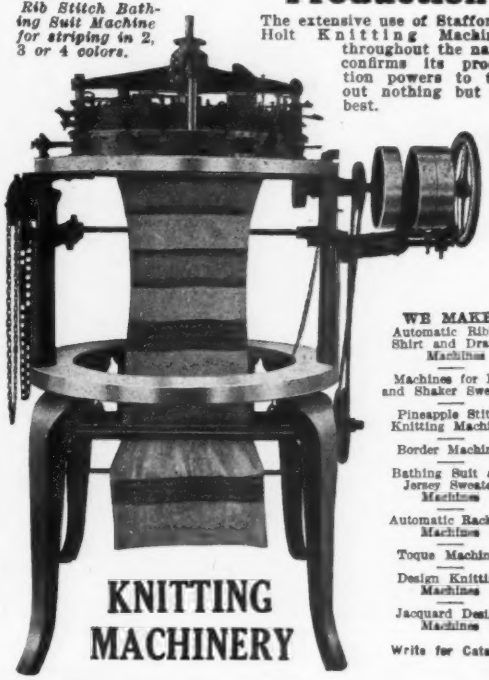
Hosiery factors see in the lower range of prices in many retail shops increasing sales of average grades of full-fashioned. A canvass of stores in a leading inland city disclosed that the average price for 42-gauge seven thread silk to welt was $1.39 a pair, and that a popular all-around price is $1.50, comparing with $1.65 last year. Some manufacturers of the seven thread report more business offered than they can accept, and one states that at the beginning of the year it became necessary to drop three jobber accounts, in order to properly take care of the others. This plant is operating 20 hours a day.

While there appears no decline of moment in demand for chiffon silk, it is the opinion of many that the sheer

Confirmed Quality Production

Rib Stitch Bathing Suit Machine for striping in 2, 3 or 4 colors.

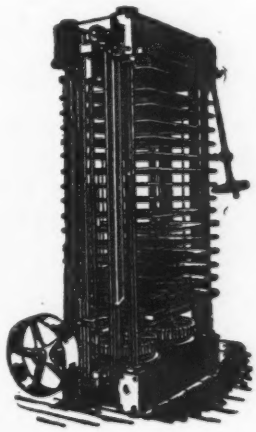
The extensive use of Stafford & Holt Knitting Machinery throughout the nation confirms its production powers to turn out nothing but the best.



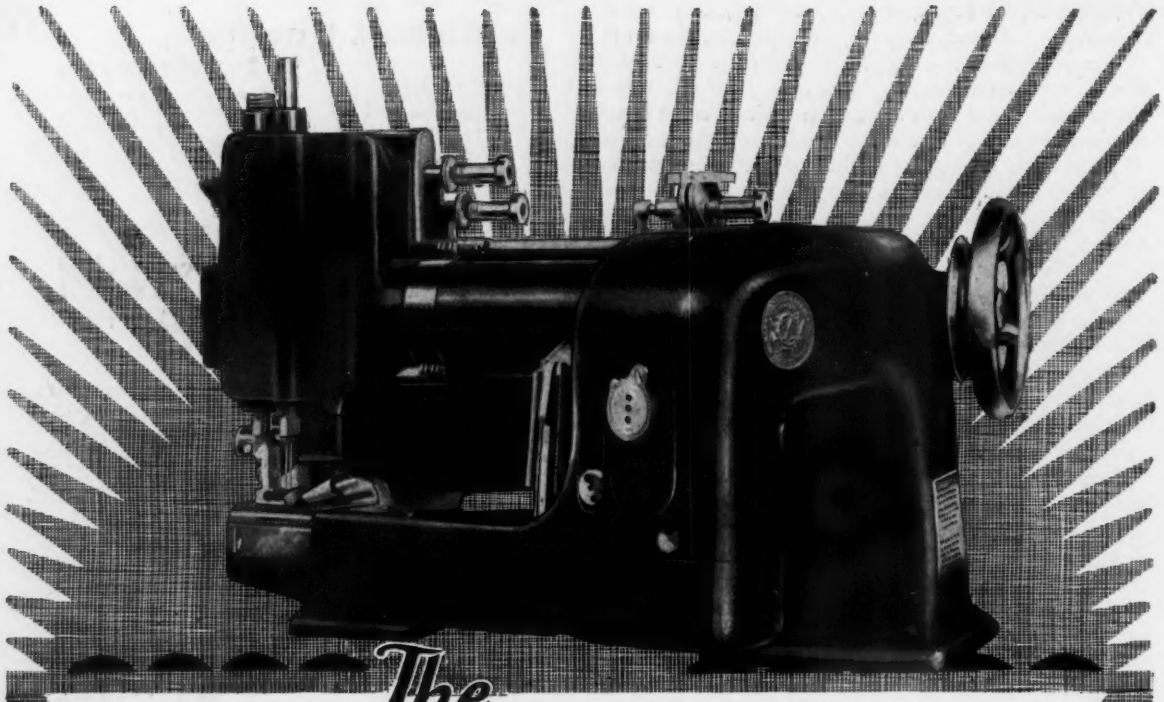
WE MAKE:
Automatic Ribbed Shirt and Drawer Machines
Machines for Rib and Shaker Sweaters
Pineapple Stitch Knitting Machines
Border Machines
Bathing Suit and Jersey Sweater Machines
Automatic Racking Machines
Toque Machines
Design Knitting Machines
Jacquard Design Machines
Write for Catalog

KNITTING MACHINERY

Stafford & Holt Little Falls, New York, U. S. A.



RELIANCE
Hot Plate Screw Press
FOR
Hosiery and Underwear
Write for Catalog and Prices
Reliance Machine Works
FRANKFORD, PHILA.



The FELDLOCK

"*The Machine that makes production*"

The FELDLOCK is a Willcox & Gibbs product. That means a great deal to manufacturers. For Willcox & Gibbs is supreme in its ability to build fine—yet strong and durable—machines.

The FELDLOCK upholds the Willcox & Gibbs reputation for giving extra value and full satisfaction. This machine feeds *off* the arm. It makes the 2-needle, or 3-needle lapped fell seam. Easy to operate, simple to adjust, quiet running.

And the FELDLOCK turns out *more* work—of the best quality.

Please send for a copy of the new Feldlock booklet

Write our Home Office for samples made on the Feldlock, or submit your own fabrics for sample purposes.

Sole American Agents for Cornely Embroidery Machines

WILLCOX & GIBBS SEWING MACHINE CO.

Home Office: 658 Broadway, New York, N.Y.

Baltimore, Md. 321 No. Howard St. | Minneapolis, Minn. 118 South 8th St. | Chicago, Ill. 506 S. Wells St. | Cincinnati, Ohio 206 West 7th St. | Cleveland, Ohio 328 The Arcade | Philadelphia, Pa. 131 So. 12th St.

Los Angeles, Cal. 938 Maple Ave. | Boston, Mass. 111 Summer St. | Newark, N. J. 13 Halsey St. | St. Louis, Mo. 1019 Locust St. | San Francisco, Cal. 504 Sutter St. | Troy, N. Y. Fulton & Fourth Sts. | Washington, D.C. 702 10th St., N.W.

Canadian Representative: W. J. Westaway Co., Ltd., Hamilton and Montreal

WILLCOX & GIBBS SEWING MACHINE CO., Ltd. 20 Fore Street, London, E. C. 2, England

J. M. De La PENA Balderas 130-A, Mexico, D. F.

JOHN C. LONG & CO. Rua Candelaria No. 81, Rio de Janeiro, Brazil

LOS FABRICANTES UNIDOS, Inc. 964-972 Calle Belgrano, Buenos Aires, Rep. Argentina

PARRISH ELLIS & CO. Apartado No. 36, Caracas, Venezuela

PARRISH & CO. Apartado No. 6, Barranquilla, Colombia

Branches: Nottingham Leicester Birmingham Luton Manchester Leeds Glasgow Belfast Paris Brussels Milan

service weight, seven or eight thread, represents the bulk of production as a whole. It gives manufacturers and distributors less trouble over returns, it is stated. Women who buy chiffons for beauty seem to expect the same service they get from heavier fabric. The complaints of the disappointed usually are passed by stores to manufacturers. The aim is, therefore, to supply a service stocking that combines in large measure the beauty of chiffons, and this is viewed as a step in the fancied trend to seven thread hose.

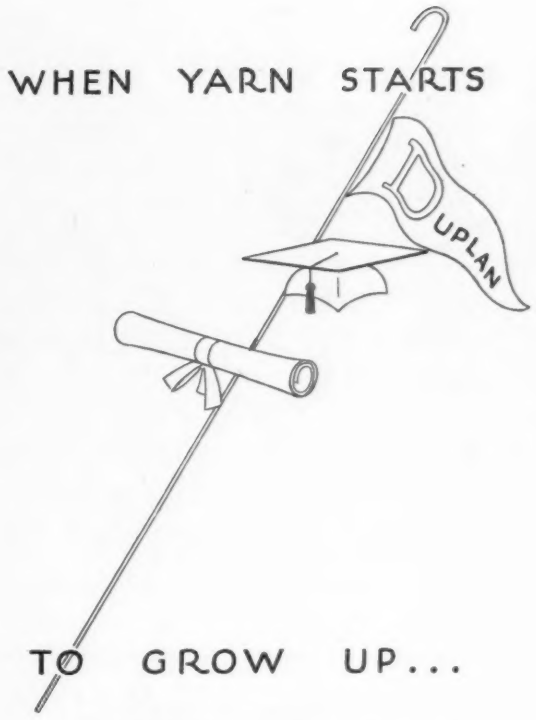
While novelty heel construction for women's hose is receiving much attention and is being promoted by leading manufacturers of high price lines, it is the opinion of some important factors that staples will this year be the better guess. It is pointed out that the practice of rigid economy is likely to be more widespread and that therefore the mass demand will be for quality minus features that add to cost. Some regard it significant that the Gotham Silk Hosiery Co., which hitherto restricted sale of its patented Pointex to retailers, now is permitting shipments to be made to certain jobbers. If resale price can be maintained, this arrangement should serve to still further popularize the Pointex, and it may crowd harder on the seamless pointed heel, popular as a dollar stocking. Although the Pointex is no longer distinctive of full-fashioned hose, it must be regarded a strong talking point for the better class of shops.

Although sales of women's wool-mix hosiery for the current season have been disappointing, some little business is being placed for the next heavy weight season, sample orders having been taken by a few of the recognized leading mills. Jobbers are operating in a modest way also in men's silk-and-wool half-hose, which, judging from the call for fancies for Spring and Summer, will run to patterns.

With novelty socks for men displayed in some chain stores at 20 cents a pair, it was felt by some factors that the day for patterns was near its end. This seems not to be the case. One of the recent additions to the range of novelties is a line priced $1.05 a dozen to jobbers, designed for the 19-cent retail bracket regularly. It is of cotton, of course, with just a suspicion of rayon content, so that it can, by a stretch of conscience, be properly described as "fiber in mixture." Selling for $1.05 a dozen, the sock obviously presents a much restricted color combination.

Volume production of fancy half-hose will be confined largely to types that can be sold profitably for 50 cents a pair. Some leading manufacturers say that while there is to be more conservative patterns in dollar socks, the popular price lines will represent the extreme in designing, and that pattern changes will follow in closer succession.

A representative mill making half-dollar novelty half-hose shows six patterns, each in a variety of colors, and will bring out new designs every 60 to 90 days. This mill last year increased its shipments by 75 per cent over 1926 and is increasing production for this year. The mechanical department of another mill has perfected a device by which the matter of making changes is much simplified. It can be attached to either of two popular seamless machines, it is stated. One feature of the device is that by simply turning two thumb screws the horizontal stripes can be narrowed or widened and, if narrowed, the number of



EDUCATING a green youth or converting a raw yarn are two great tasks, yards apart in classification, yet alike in their needs for mature judgment, wrinkled experience and soundly conceived advice.

After a full-term period of both active and academic participation in fine yarn conversion, Duplan now offers a place of matriculation to the silk and rayon yarns of America.

You know Duplan Fabrics. If you feel that the same methods, the same converting facilities which contribute to their square-capped, graduated look, would be good for your yarns—send them off to Duplan. Exactly, as do mentionable numbers of other textile manufacturers. Address our

Commission Department

DUPLAN SILK CORP.

135 Madison Ave. New York, N. Y. Hospital Trust Bldg. Providence, R. I. Johnston Bldg. Charlotte, N. C.

Mills:

Hazleton, Pa. Kingston, Pa. Nanticoke, Pa.

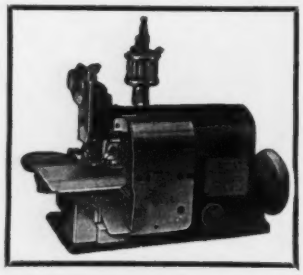
DUPLAN

MERROW

REG. U. S. PAT. OFF.

HIGH SPEED TRIMMING AND OVERSEAMING, OVEREDGING AND SHELL STITCH MACHINES FOR USE ON KNITTED AND WOVEN FABRICS OF ALL KINDS

———200 VARIETIES FOR 200 PURPOSES———



CLASS 60 MACHINE

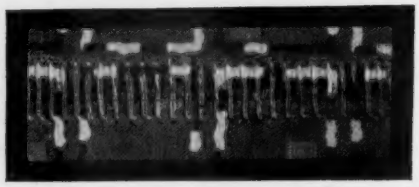
INQUIRE ABOUT NEW MERROW MACHINES

STYLES 60-ABB and 60-D3B

For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

FLAT BUTTED SEAM

Permits goods to pass through finishing machines, uninterrupted, for such operations as Shearing, Calendering, Mercerizing, Bleaching, Dyeing and Printing—with *remarkable saving*—both in labor and fabric.



Butted Seam, natural size, made by STYLE 60 ABB MACHINE on Cotton Goods which have been subsequently processed. The STYLE 60 D3B makes a similar though much wider seam designed for use on sleazy or loosely woven goods to insure holding.

OTHER RECENT DEVELOPMENTS—FOR THE RAYON TRADE

STYLE 60 RD —For a three-thread overedge finish, either straight or scalloped, on Rayon Bedspreads and other sleazy articles on which the ordinary edge finish will not hold.

STYLE 60 JDC —For two-thread **FLAT SEAMING** on Rayon Underwear.

Let Us Demonstrate the Work of These and Other Machines on Your Own Fabric.

THE MERROW MACHINE COMPANY

16 LAUREL STREET, HARTFORD, CONN.

More than ever before Men are wearing Fancy Hosiery

The widespread popularity of fancy stockings among men of today, is constantly growing, with the result that a greater variety of patterns is necessary. The manufacturer, who has the equipment that is capable of producing the greatest number of styles, with the least effort is sure of obtaining his share of business.

The Standard line of machines, with the various attachments, offers the hosiery maker a means of enlarging his field. These knitters have practically no limit in range of pattern change.

The pattern shown here was made on a Standard H Knitting Machine with the Attachment "R", style 2. This produces figure patterns in six colors. A real feature of this machine is the ease with which patterns can be changed. The operation is without the use of jacks.

Our catalog, which fully describes these knitters will be of interest to you. Ask us for it.

STANDARD - TRUMP BROS. MACHINE CO., *Wilmington, Del.*

DISTRICT OFFICES

366 Broadway, New York City

James Building, Chattanooga, Tenn.

stripes increased. It is in operation in a mill selling to retailers direct.

Boys' golf hose is coming out in greater variety, in patterns and of general construction that put it in the class of misses' sports hose. Several interior Pennsylvania mills specializing in this class of hose have been operating to capacity for some time, and one or two others are about to introduce some striking creations, to sell for a half dollar a pair. The Unique Knitting Co., recently removed from Philadelphia to Acworth, Ga., has been signally successful with boys' golf and children's fancy hose. The Pilking & Madeley mill in Philadelphia, rated one of the leaders in children's fancies, recently installed 75 new machines, and it is stated has an equal number on order. This concern, if it does not excel in number of patterns, at any rate takes rank with the foremost in this respect.

Unofficial reports of manufacturers of infants' socks indicate the production for the current fiscal year will be the lightest in years, excepting lines adapted to chain store popular prices, it appears that the comparatively meager business placed by leading jobbers confirms the common opinion that there is a pronounced slump in the socks. Light buying and late contracting are a surprise to practically all mill interests. Some of the old-time manufacturers who ordinarily sell up their production by this time say they doubt if they will have sale for a half of their usual output. Even though there develop such demand late in the season as often was experienced, it would be impossible to bring the year's run-off up to that of average years.

Details for some good-sized orders were received by mills early in January, and some initial orders were placed, but the business in the aggregate is said to amount to 50 per cent less than to the corresponding period of 1927. Blame for the unusual situation is laid to the underpricing of rayon socks as a bid for the chain store business. But, it is understood in the trade, even this business is in disappointingly small volume, due, it is stated, to importations of German-made socks for the low price brackets. Numbers of jobbers no longer carry infants' socks in their lines, on the ground they are a chain store proposition, and that all that is left for jobbers are the higher-priced goods, which represent the smaller part of the sock output.

A buyer for an old-time jobbing house accounts for the slump on the theory that mothers put children into long hose at a more tender age than was the custom. In support of this view, he cites increasing sales of three-quarter length hose in small sizes, from which he concludes that the fancy straight leg is taking the place of the one time popular roll top in colors. So far as hosiery requirements are concerned, it appears that infants cease to be infants earlier in life, and it would be not surprising if much of the sock machinery be consigned to the scrap heap unless adapted to other prposes.

The Schofield Shelmire Co., one of the leading Philadelphia knit goods jobbers, in January began liquidation of its stock of infants socks preliminary to discontinuing their sale. Socks costing wholesalers $1.85 a dozen were let go at $1.90. They are a product of a leading Pennsylvania mill selling heavily to a chain of stores in which the socks are sold for 10 cents a leg, and in appearance and construction probably match anything available to small

THE ELMORE COMPANY
MERCERIZED
YARNs
Spindale
N.C.

Single Yarns
MERCERIZED
Licensed Manufacturer
TINTED YARNS
Bleached, Dyed, Mercerized
and Glazed Sewing Threads.
THE ELMORE COMPANY
SPINDALE, N. C.
Selling Agents
JOHNSTON MILLS COMPANY
New York: 93 Worth St. Philadelphia: Public Ledger Bldg.
Chattanooga: 805 James Bldg. Charlotte: Johnston Bldg.
READING, PA. CHICAGO, ILL.
Burke County Trust Bldg. 166 W. Jackson Blvd.
CANADIAN REPRESENTATIVE
Slaters, Ltd., 53 Yonge Street, Toronto, 2, Canada

An Eastwood Product

EASTWOOD HORIZONTAL WARPER
The EASTWOOD SWISS MOTION
HORIZONTAL WARPER
(5½ Meters, 6, or 8 yard Reel)
RAYON ANY MAKE OF YARN
SILK HARD OR SOFT
FINE COUNTS OF COTTON
BENJAMIN EASTWOOD CO.
Paterson, N. J.
Represented in the South by
Carolina Specialty Co., Charlotte, N. C.

ABERFOYLE MANUFACTURING COMPANY

MERCERIZED YARNS

JAMES BUILDING
CHATTANOOGA, TENN.

418 FRANKLIN STREET
READING, PA.

122 E. 7th STREET
LOS ANGELES, CALIF.

MAIN OFFICE
BANKERS TRUST BLDG.
PHILADELPHIA

Mills
CHESTER, PA. BELMONT, N. C.

323 SO. FRANKLIN ST.,
CHICAGO, ILL.

MANGUM STREET,
HIGH POINT, N. C.

WESTAWAY BUILDING
HAMILTON, CANADA

QUALITY is the watchword today. Modern mill men who hold to this motto have discarded ordinary grades of Mercerized Yarn.

Standard Mercerized Yarn is the logical selection. In it are incorporated strength, uniformity, economy, evenness and lustre, qualities that produce the highest grade of merchandise economically.

STANDARD-COOSA-THATCHER CO.

CHATTANOOGA, TENN.

SALES OFFICES:
Lafayette Bldg., Philadelphia

CANADIAN REPRESENTATIVE:
Wm. B. Stewart & Sons, Ltd.
Toronto, Montreal

Standard
MERCERIZED YARNS

retailers for the 25-cent bracket.

Underwear.

Not the dullest spot in cotton underwear is in women's lines, judging from conditions among manufacturers in Pennsylvania. Mills shipped out more medium weights to the beginning of the year than in 1926, it is stated by the managements of some of the leading concerns in the Schuylkill Valley, and now they are well supplied with orders for light weights. While chain stores and catalog houses are large users of women's cotton underwear, there is increasing distribution by jobbers.

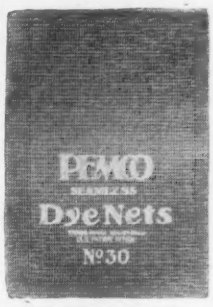
It would appear that if manufacturers resorted to publicity for extolling the merits of cotton in contra-distinction with other fibers for underwear they would create a consumer demand. They receive no support from women's specialty shops and the better retail stores, which, following the line of least resistance, exploit silk and rayon.

It will be recalled that a few years ago manufacturers of men's knitted cotton underwear entered upon an advertising campaign, after they had been losing out for some time to manufacturers of nainsook athletic suits. What happened was that the knitted last year, and in 1926, recovered much of its lost ground and that the markets were oversupplied with nainsooks. Publicity for women's cottons might not displace much of the rayon, but it would bring about a closer balance between the two, regardless of style in dress.

Having had their test of strength with nainsooks, manufacturers of men's cotton light weights are confronted with keener competition from men's rayon union suits. They have had a tryout and are found satisfactory as to service, say persons who are able to produce records for length of wear. Necessarily they are not as absorbent as cotton garments, but lavish dressers like them and others will want them as a matter of keeping in step with the tendency to dress up. But it cannot be said that rayon union suits for men have advanced far beyond the experimental stage, and it seems too soon to predict permanency for them, particularly if the knitted cotton interests repeat the performance which apparently caused a setback for nainsooks.

After a mild spurt following the opening by southern mills in the latter part of November, business in men's heavy weight cotton ribs is seriously lagging. That wholesalers were little interested in underwear for the Winter of 1928-9 was evidenced by the fact very few of the northern mills came on the market during December, some withholding prices until around the middle of January and making no effort to obtain contracts. It was believed the rise on cotton and its stability on a higher level of prices would stimulate jobber interest. The effect was to keep distributors out of the market, notwithstanding mill prices were based on cotton at 18 cents.

Admitting the low prices of 1926-7 would be impossible under existing circumstances, jobbers nevertheless find it hard to reconcile themselves to the modest advances. Buyers present the argument that as retailers were late with their orders last year they will defer still longer this year, with prices higher, and that therefore they find it expedient to do no contracting of moment long in advance of the beginning of their distribution period. Besides, it is stated, their sales of underwear for the current season fell below expectations, notwithstanding there were several spells of real underwear weather. Commenting on



Why–

Pemco Dye Nets
Are More Economical

Did you ever stop to figure the economy in using really efficient dye nets? Too many mill men never give this important incidental item a thought. Pemco Seamless Dye Nets save time, labor and money in many dye houses. The need for such savings was the inspiration for Pemco, the result being nets that bespeak economy. Seamless. Strong. Durable. Unusual construction makes handling of goods easy. Rips are impossible, therefore preventing the terrifying accident of products getting loose in the bath—a tangled mass of seconds.

WRITE TODAY

PENDLETON MANUFACTURING COMPANY, AUTUN, S. C.

PEMCO
SEAMLESS
DYE NETS

ZEHLENDORF
VISCOSE RAYON
YARNS
Finest Qualities
SPOT AND FUTURE
DELIVERIES

Zehla-Z-Rayon

Sole
United States
Representative

A·S·NEUBURGER
200 MADISON AVENUE · NEW YORK

DIXIE MERCERIZING COMPANY

Mercerized AIR DRIED YARNS

Chattanooga Tennessee

BRANCH OFFICES
New York City
Philadelphia, Pa.
Reading, Pa.
Chicago, Ill.
Los Angeles, Cal.

BRANCH OFFICES
Charlotte, N. C.
Greensboro, N. C.
Toronto, Ont., Can.
Leicester, England.

HUGHES FAWCETT

IMPORTER AND COMMISSION MERCHANT

LINEN YARNS
For Weaving, Knitting and all Purposes.

TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth

Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine

115 Franklin St., : NEW YORK

— RAYON —

The Yarns Corporation of America — Grist Yarns — Ring Yarns — AB — Quality Yarns

Colored and Bleached on Cones, Cops, Spools and Skeins

Direct, Sun-fast, Tub-fast and Indanthrene Dyes

The Yarns Corporation of America
40 West 20th Street New York
Southern Representatives:
Walter C. Taylor, 211 Kinney Bldg., Charlotte, N. C.

S. L. DIGGLE MANAGER — JOHNSTON BLDG. CHARLOTTE N. C.

ACME
SALES COMPANY

CARDED-COMBED-MERCERIZED
COTTON YARNS

ALL COUNTS AND DESCRIPTIONS FOR THE KNITTING-WEAVING-CONVERTING TRADE

REPRESENTING DIXIE MERCERIZING CO. STRENGTH QUALITY LUSTRE CHATTANOOGA TENN.

CONTROLLED MANUFACTURE IN NORTH CAROLINA

JAMES CHITTICK

Consulting Textile Specialist

45 EAST 17th STREET, NEW YORK

Fabrics analyzed. Causes of damages determined. Mills inspected and reported on. Arbitrations conducted. Expert testimony in law suits. Merchandise examined.

TEXTILE QUESTIONS OF EVERY KIND HANDLED
CORRESPONDENCE INVITED

CONTINENTAL DRY TRANSFERS

American Trade Mark Corporation

SUCCESSORS TO

CONTINENTAL TRADE MARK CO.
254 W. 31ST ST., NEW YORK, N. Y.

KNOXVILLE, TENN. PHILA., PA.

Weimar Bros.

Phone Connections
Works: 2046-48 Amber Street
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

the attitude of retailers as a body, a jobber said "underwear is the last thing they will buy."

If there are carryover stocks of underwear, they are not in the stores of retailers. Judging from transactions which have fallen under observation, they sold their last garment. Jobbers in January were receiving orders for two-twelfth dozens, a package in some instances being made up of two sizes, and it happened that a retailer's customer was kept waiting until a garment could be gotten from a nearby jobber, this occurring where the shops were in close proximity to a jobbing house. In this way wholesalers diminished their stocks of leftovers at the end of last year.

The season's opening of heavy weights proved a long drawn out formality, dragging through around two months. It had its beginning when several leading southern mills announced prices on November 28 and was still in progress in the middle of January, when the Blood Knitting Co., one of the more widely known northern manufacturers, came on the market, with advances over 1927 of 87½ cents a dozen on 14-pound union suits and corresponding advances on other weight suits and shirts and drawers. Advances of five to ten per cent are shown in the new prices of the cotton and cotton mix lines of the Atlas Underwear Co., which named prices on January 9. With these two concerns quoting openly, selling for 1928 was pretty generally inaugurated. Some of the Blood Knitting Company's prices were slightly below those of the first southern mills to open their lines, and were regarded a forerunner of sharper competition between the two manufacturing sections, probably resulting in the removal of more of the northern mills to southern fields.

Following closely upon the Blood company's price announcement, the Appalachian and Standard mills made a 25 cent cut on 16-pound union suits. The Blood company at once countered with a 12½ cent cut. The reductions were referred to as merely adjustments. Jobbers said they looked for no continued price competition.

A different sort of competition is foreshadowed in the action of a northern manufacturer who, while continuing to distribute through jobbers, will relieve them of the necessity of carrying stocks. The jobber simply will buy samples, book orders from retailers and send the orders to the mill, which will make direct shipment to the retail store and invoice the jobber. In this manner the jobber becomes an agent, as it were, and the mill carries the bag for the retailer. If the plan works out, other mills doubtless will adopt it. It has been suggested that if any further step for stimulating sales through cooperation becomes necessary, retailers, instead of putting underwear in stock, sell to the consumer from sample, send the orders to jobbers, who will in turn send them to the mill, which would credit jobber and retailer with an agency commission.

Sweaters.

Jobbers are going over mills' samples of sweaters, arranging their lines for the 1928 Spring and Fall seasons and doing some contracting. In the trade there exists the notion 1928 will prove an old-fashioned sweater year. Some mills report considerable business already placed, and all mention shaker knit coats as probable leaders. Despite adverse weather conditions late in the Fall of last year, some large retailers increased their sales, while

A salesman who is always selling

In a time when selling costs are rising, you hesitate to increase your sales crew. But we have an A-1 salesman for you, who always sells and never presents an expense account.

"Star" Brand silicate in your peroxide bleach bath produces a permanent white in your goods, without tendering the fabric.

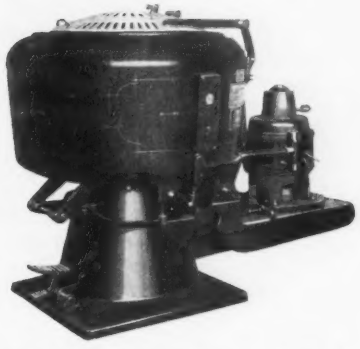
Let "Star" Brand help your sales.

Silicate Headquarters

Philadelphia Quartz Co.

General Offices: Philadelphia

PQ



For Those 20 to 75 Pound Loads

FOR those 20 to 75 pound lots—that's where the American Underdriven Extractor comes in handy. The basket is placed at just the right height to permit quick and easy loading and unloading; the motor drive makes the machine self-contained, and ready to go at any minute; and it requires so little floor space you can fit it in any place. Write for details.

The American Laundry Machinery Co.

Specialty Dept. C. CINCINNATI, OHIO

The Canadian Laundry Machinery Co., Ltd.
47-93 Sterling Road,
Toronto 3, Ont., Can.

jobbers in certain cities, notably in Philadelphia, are reported having fallen behind. With the lumber jack apparently out of the running, knitted sweaters this year should have a larger sale, aside from the fact sweaters as a distinctive commodity are, apparently, gaining in favor. It is held that in no line of apparel can the consumer get more for the money invested than in knitted outer garments, and the same may be said to be true of knitted cotton underwear.

For manufacturers there is developing a good Spring season for women's sweaters. This is held as presaging a bristling market for fall weights, for men and women, a view that receives some support from the business already booked by mills. Bathing suits are sold well ahead, some few mills being committeed for practically their entire season's production. Firmness in worsted yarns, and nothing in sight to indicate any weakening, makes bathing suits and sweaters a comparatively safe asset for distributors taking advantage of current prices.

New Knitted Features.

Knitted dresses of cotton and rayon are among the most promising novelties for spring, having been made in a full range of colors with a spot of rayon, giving rather an unusual effect. Plain cottons are also featured in the selling markets and mill men claim there is a good interest developing.

A few of the all cotton jerseys have also been prepared in street colors and light shades with considerable emphasis placed upon white for the Palm Beach trade and a good business has been done by those houses catering to this line of trade, although there are a few of the larger producers that claim dresses are too great a risk and have been unable to make the profit they anticipated. White and light colored plaited effects appear to be among the most active at the close, although there is a fair amount of interest shown for the street colors in dark, red, reindeer, silver and copenhagen, trimmed in combination colors.

In some quarters it has been said that rayons are the most popular and likely to be most active, but some objections have been made to the glossy finish, which a few of the houses are now beginning to overcome. Special directions are attached to every garment for laundering and the results have been more satisfactory and complaints done away with.

But the fact remains that good sized contracts have already been placed for Spring consumption and factors are of the opinion that cottons will go bigger than the silk numbers. Each one is trying to produce something that is just a little bit more sensational than the other and some interesting and popular models have been presented.

It has been said by both producers and jobbers that during the holiday season there has been a surprising amount of business done in rayon hosiery. As in other products, special directions are attached for the laundering, and those numbers which have been sold for as little as 25 cents have met with an unusual demand, and mills are about cleaned out on such numbers. One jobber said that some of these lines had been imported, although others stated they were domestic lines and it was said that being made in the popular colors and advising they be laundered before wearing has done much to make them popular as well as added to their wearing qualities.

New scarfs have also been presented, and while there are some manufacturers that believe they will be good numbers, others are afraid of such novelties except at the holiday season when they meet with a more active demand. Light colors have been most wanted, it was said at the close and some shawl types have been included with printed borders for the Summer trade.

Whether or not the printed dresses are likely to become popular is a question that is meeting with many different opinions and much discussion in the metropolitan area.

Some printed hosiery has also been tried out during the past few weeks and some factors believe they will become popular numbers, although are not certain until they see how they are liked at the southern resorts. It was said that sports numbers may be popular, but there are others that do not have much confidence in them for street and dress occasions.

A Testing Machine for Sliver and Roving.

A device for testing roving and sliver, designed to aid in the production of more even and uniform yarn, is being marketed by the Economy Spinning Associates, 900 Noble St., Anniston, Ala. It is pointed out that comparatively few men test rovings and slivers for evenness, when such a practice would permit a check-up to determine the source of unevenness which develops subsequently in the finished yarn.

The machine consists of an apparatus which produces "double twist" samples, handling coarse slivers as well as fine roving. A piece of roving or sliver about two yards long is inserted in the machine in V-shape. It is threaded over a weight, and the ends fastened to spindles at the top of the machine. The weight holds the lower loop of the sliver or roving under tension. The two ends of the loop are twisted, by means of crank and gearing attached to the spindles, and after sufficient twist is inserted, the weight is released. The weight prevents the two strands twisting together until it is released. The two parts of the strand then twist together into a balanced strand, which is the double twist sample.

The samples are placed against a black background, and by holding them against the light at different angles, the defects and uneven places are made visible. These samples can be permanently filed away for uses of comparison. It is pointed out that by the use of this method, the overseer of carding can establish definitely the particular machine causing uneven work, thus preventing the handling of work that is not uniform and even in later processes. It is especially recommended by the producers for use in connection with long-draft spinning.

New Equipment for Welding Use.

Oxweld Acetylene Company, 30 East 42nd St., New York City, has brought out a new type of two-wheel truck for welding equipment. The wheels were increased to 24-inch diameters. The handle is continuous, and the upper portion bent back so the truck is easily handled by an operator of small stature. The tool box is larger and is provided with a cover and holder for extra blowpipe tips. A new cutting blowpipe, with improvements in design, to be known as Type C-14, has also been developed.